Shrimp Survey of the Strait of Georgia June 1982

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ABSTRACT

Boutillier, J. A. 1984. Shrimp survey of the Strait of Georgia. Can. MS Rept. Fish. Aquat. Sci. 1762: 105 p.

A trawl survey of five shrimp fisheries in the Strait of Georgia was conducted aboard the research vessel G. B. Reed in June of 1982. The data collected during this survey provided information by species on: catch composition, distribution, sex composition, and length frequencies. Each fishery had a mixed catch composition of three or four of the following commercial shrimp species: Pandalopsis dispar, Pandalus platyceros, P. jordani, and P. borealis.

Key words: Shrimp, Strait of Georgia, Pandalopsis dispar, Pandalus platyceros, Pandalus jordani, Pandalus borealis.

RÉSUMÉ

Boutillier, J. A. 1984. Shrimp survey of the Strait of Georgia. Can. MS Rept. Fish. Aquat. Sci. 1762: 105 p.

En juin 1982, le personnel du G. B. Reed a effectué un levé au chalut de cinq zones de pêche de crevette dans le détroit de Géorgie. Les données recueillies ont permis d'obtenir, pour chaque espèce, de l'information sur la composition des prises, la répartition, le rapport des sexes et la fréquence des longueurs. Les prises de chaque zone comprenaient trois ou quatre des espèces de crevette d'importance commerciale suivantes: Pandalopsis dispar, Pandalus platyceros, P. jordani et P. borealis.

Mots-clés: crevette, détroit de Géorgie, Pandalopsis dispar, Pandalus platyceros, Pandalus jordani, Pandulus borealis

INTRODUCTION

In June of 1982, a trawl survey aboard the G. B. Reed was carried out to establish a preliminary biological data base for the shrimp trawl fisheries in the Strait of Georgia region (see Fig. 1). The data base was intended to provide information on shrimp stocks in regard to: species composition, sex and length frequencies, distribution, and abundance. In addition to the biological data, physical oceanographic information, in the form of temperature profiles, was collected at a number of stations.

SURVEY METHODS AND FISHING GEAR

The trawl survey was carried out using a standard 18.6 meter high-rising, N.M.F.S. shrimp sampling trawl, which has been described by Boutillier (1977). Temperature observations were made using expendable bathythermographs (XBT's).

The trawl locations were set on a variety of grid patterns depending on the area of survey. Grid patterns were designed to have tows either cover the depth ranges in 18-37 m intervals or equi-distant intervals. In some areas, the patterns were altered if: the area of operations was congested with traffic; bad bottom was encountered; or the area was too small to continue any systematic survey pattern.

Tows were scheduled for 30 minutes although there was considerable variation caused by traffic, and bad bottom. The distance travelled was calculated for each tow and is presented in Appendix Table 1. Upon completion of each tow, the large fish were removed from the catch, identified, and weighed. The remaining invertebrates, and small fish were put into tubs and weighed. One tub was then sorted into shrimp by species and scrap, the percentage of each species of shrimp by weight was determined, and a total weight of shrimp was extrapolated for the tow. A sample of each species of shrimp was collected and analyzed to calculate the number of shrimp per kilogram, the sex composition and the length frequency distribution.

RESULTS

Within Georgia Strait five areas were surveyed:

1) The Vancouver area - Statistical area 28-7; 29-9 and 10. This included tows in Burrard Inlet and on Sturgeon Bank.

2) The Sechelt-Howe Sound area - Statistical area 29-1, 2 and 3 and 28-1: this included tows in the Strait of Georgia from Sechelt to Bowen Island and in Howe Sound between Keats and Gambier Islands.
3) The Comox-Qualicum Beach area - Statistical area 14: this included tows in Comox gully and in the Strait of Georgia off Hornby Island, French Creek, and Qualicum Beach.
4) The Stuart Channel area - Statistical areas 17 - 4, 5, 6 and 9: this included tows from Dodd Narrows to Sansum Narrows.
5) The Northumberland Channel area - Statistical area 17-13: only one tow was made in this area off the west side of Gabriola Island.

Tow locations are shown in figures 2-20. Temperature data are presented in Appendix Table 1 associated with the appropriate tow location.

All the areas surveyed were mixed fisheries with 3 or 4 of the following commercial shrimp species found in each area (Table 1): Pandalopsis dispar (sidestripe), Pandalus platyceros (prawn), P. jordani (smooth pink), P. borealis (northern pink). The sex and size composition of the commercial shrimp for each area, are presented in Figures 21 to 36.

Table 1. Maximum catch (kg/h) of commercial shrimp species by area.

	Pandalopsis dispar		Pandalus platyceros		P. jordani		P. borealis	
Vancouver	(Fig 21)	30	(Fig 22)	17	-		(Fig 23)	157
Sechelt-Howe Sound	(Fig 24)	22	(Fig 25)	12	(Fig 26)	14	(Fig 27)	36
Comox-Qualicum	(Fig 28)	16	(Fig 29)	10	(Fig 30)	92	-	
Stuart Channel	(Fig 31)	156		6	(Fig 32)	36	(Fig 33)	176
Northumberland	(Fig 34)	14		2	-		(Fig 35)	4

Figures 36 to 39 graphically represent standardized catch curves of P. jordani, P. borealis and Pandalopsis dispar by depth interval for major areas sampled. (Northumberland was not included because only one tow was made in the area).

DISCUSSION

In general the survey provided base-line data for each shrimp fishery on mixed species composition, growth rates by species, and relative year-class strengths.

Estimates of abundance of the shrimp stocks using area swept calculations were not obtained because the areas of concentration were not delimited to any degree of confidence. Future stock assessment could investigate if seasonal variations in distribution would allow for a more accurate delimitation of stock concentrations.

An interesting aspect seen in the catch curve figures is the variation in depth distribution between species of shrimp and different areas.

Generally P. dispar were concentrated in the deep water tows i.e. > 110 m, while P. jordani were concentrated in the shallow water tows i.e. < 110 m. P. borealis, however, showed a variation in its depth preference which appeared to be correlated with the presence or absence of P. jordani. If P. jordani was found in the same area, then the P. borealis was concentrated in the deeper tows in association with P. dispar (see catch curves for Crofton and Sechelt). In areas where P. jordani was not present, then the P. borealis was concentrated in the shallow tows (see catch curves for Vancouver).

If a TAC type management approach was to develop for these shrimp fisheries, then the necessary parameter estimation procedures would require a more elaborate data base to be developed from further research cruises and port sampling programs. In particular a stock assessment procedure would have to be developed using either a more refined area swept survey or a log-book program.

ACKNOWLEDGMENTS

The author wishes to thank the captain and crew of the G.B. REED; Steve Head and Debbie Marback provided technical assistance at sea; Debbie Marback and Laurie MacKie drafted the figures.

LITERATURE CITED

Boutillier, J. A., A. N. Yates, and T. H. Butler. 1977. G.B. Reed Shrimp Cruise 77-S-1 May 3-14, 1977. Fish. Mar. Serv. Data Report 37: 42 p.

Fig. 1. Survey sites in Georgia Strait.

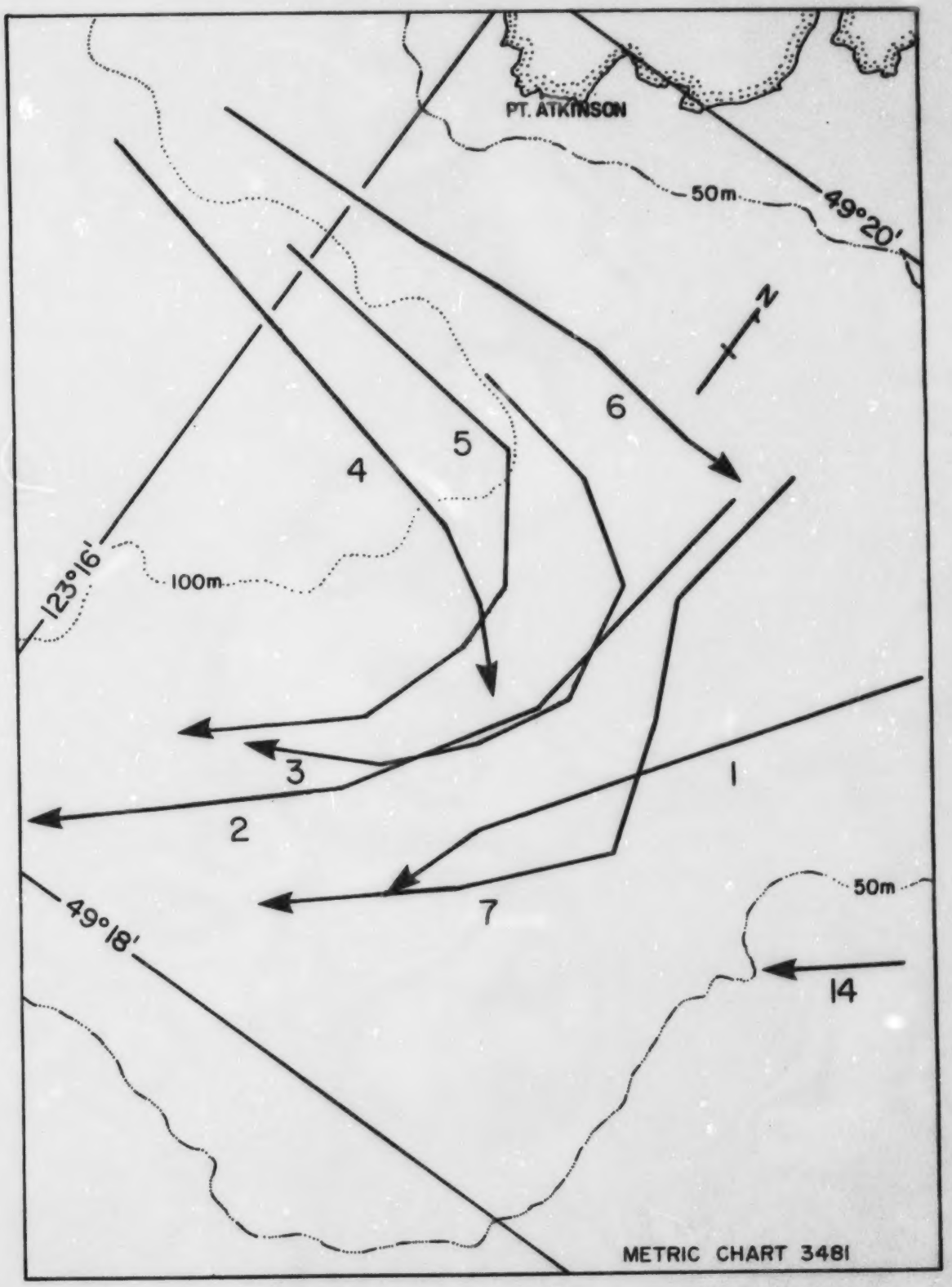


Fig. 2. Trawl tows in Burrard Inlet.

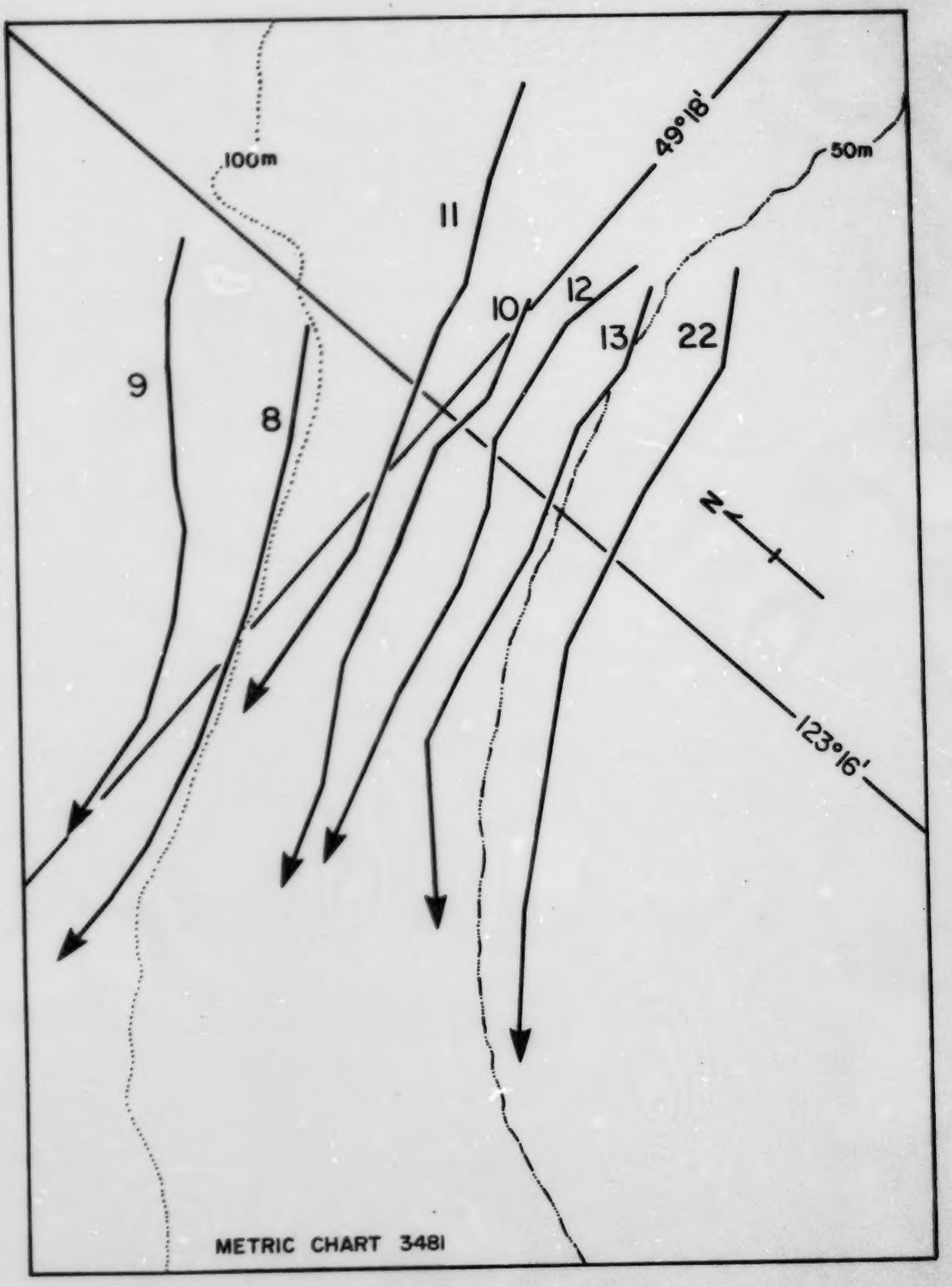


Fig. 3. Trawl tows in Burrard Inlet.

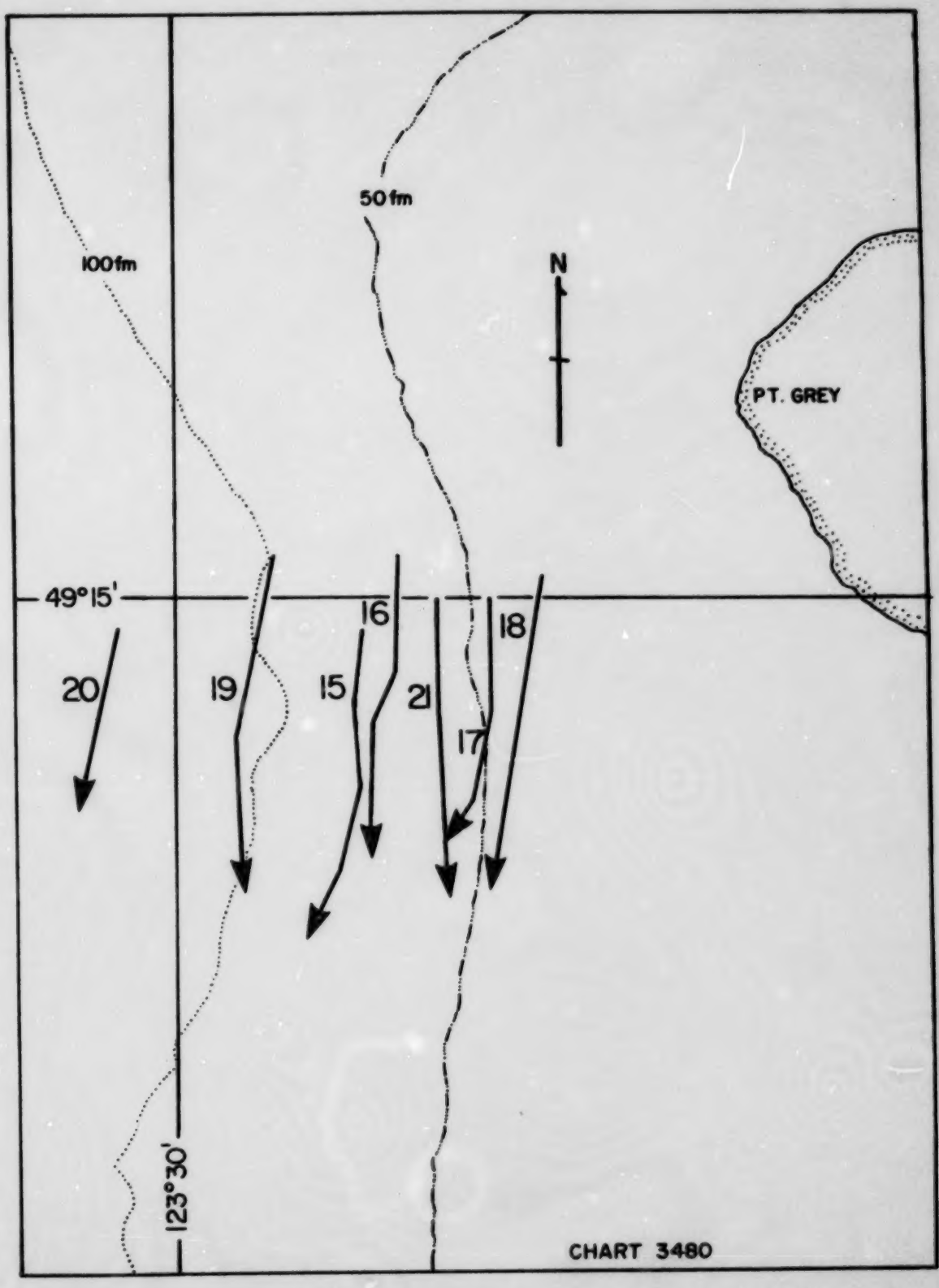


Fig. 4. Trawl tows on Sturgeon Banks.

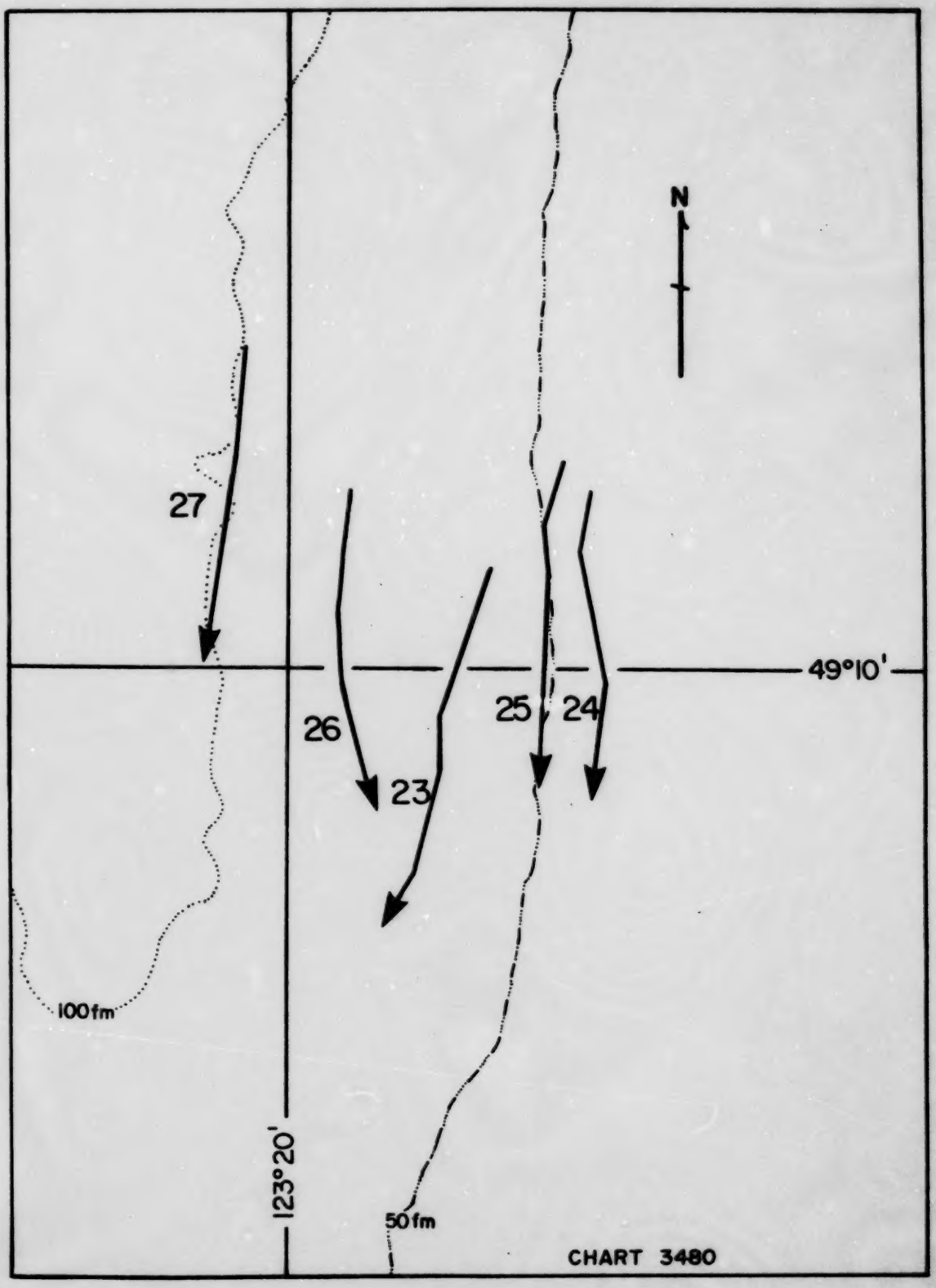


Fig. 5. Trawl tows on Sturgeon Banks.

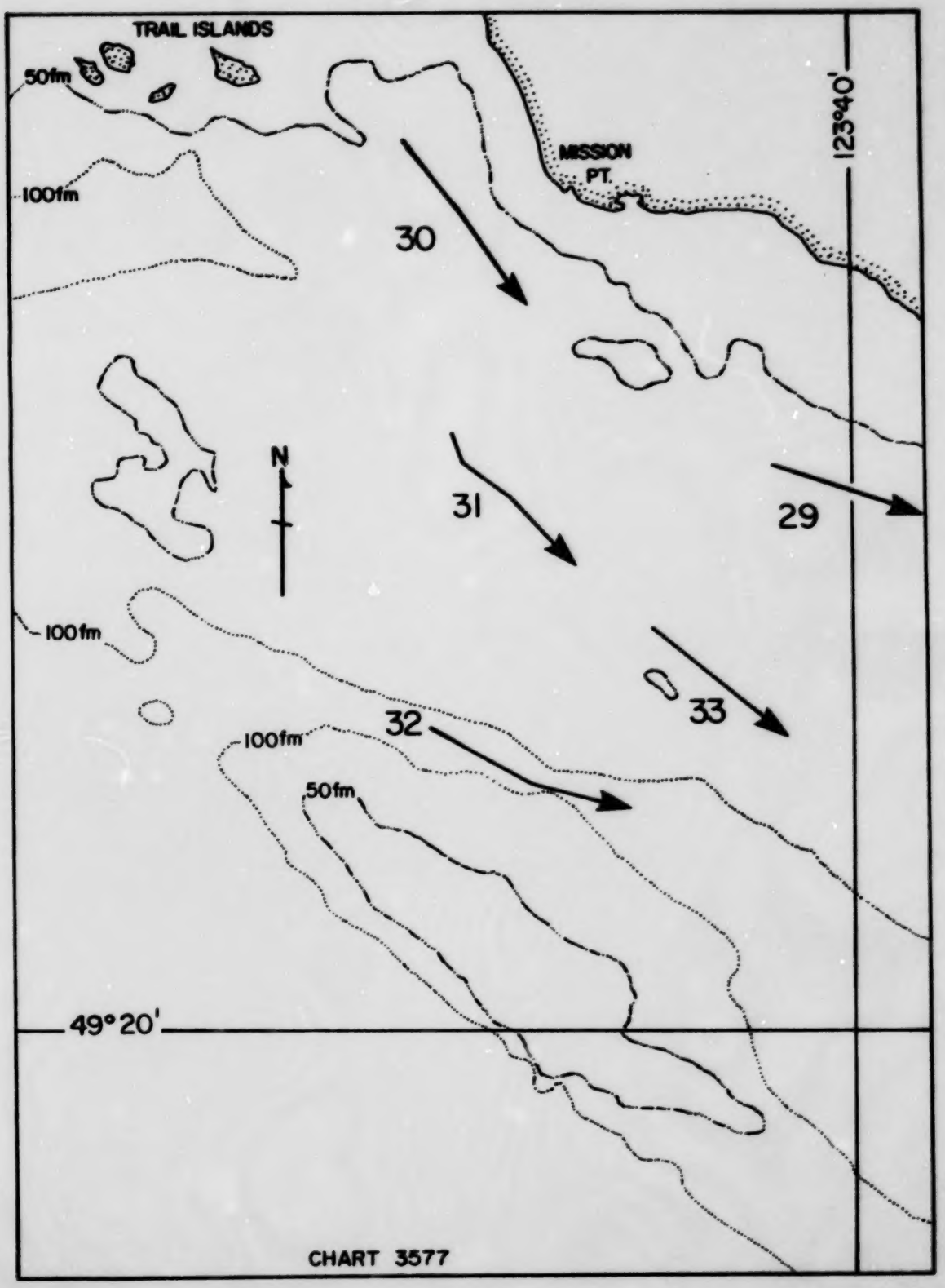


Fig. 6. Trawl tows off Sechelt.

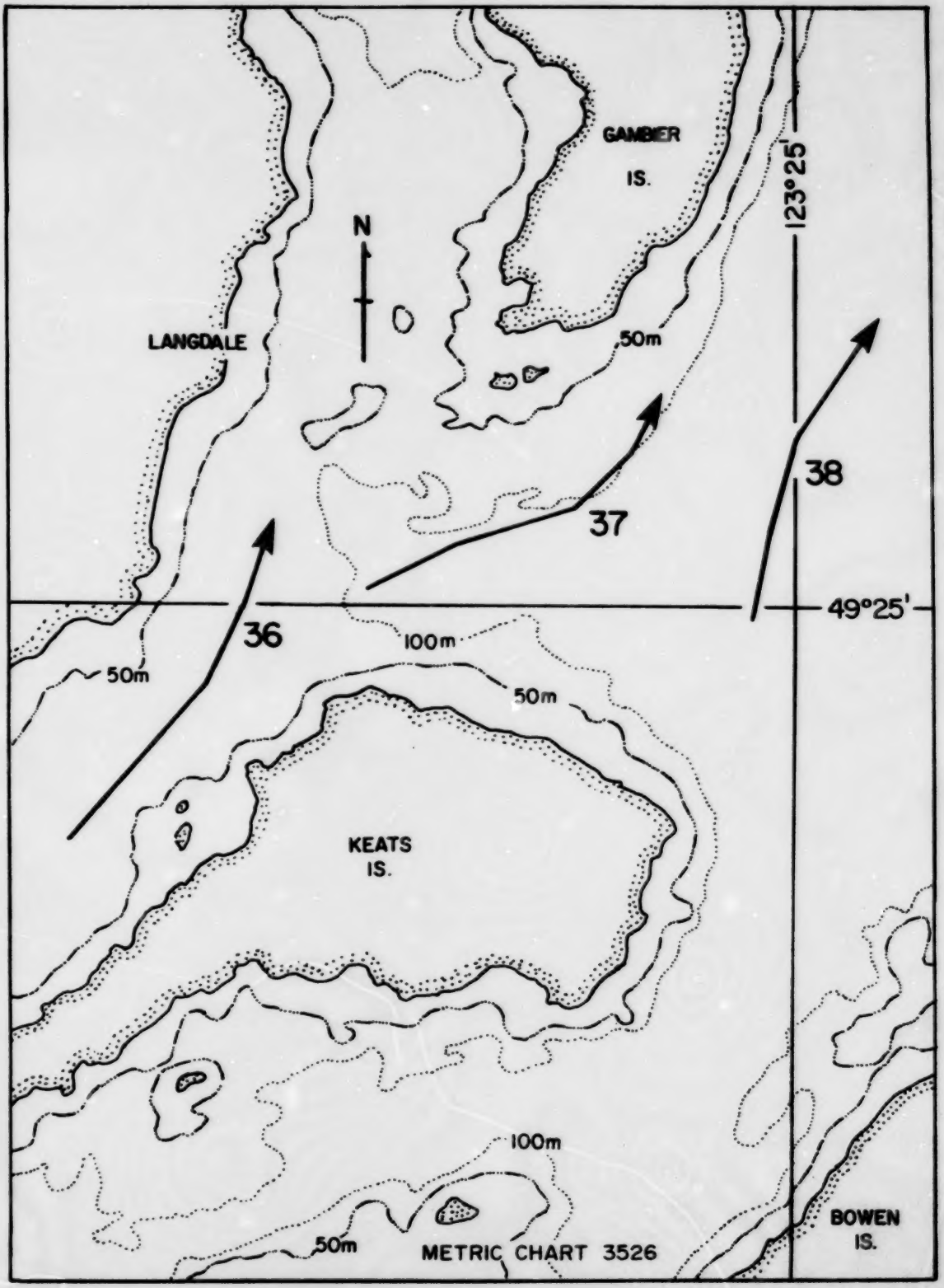


Fig. 7. Trawl tows in Howe Sound.

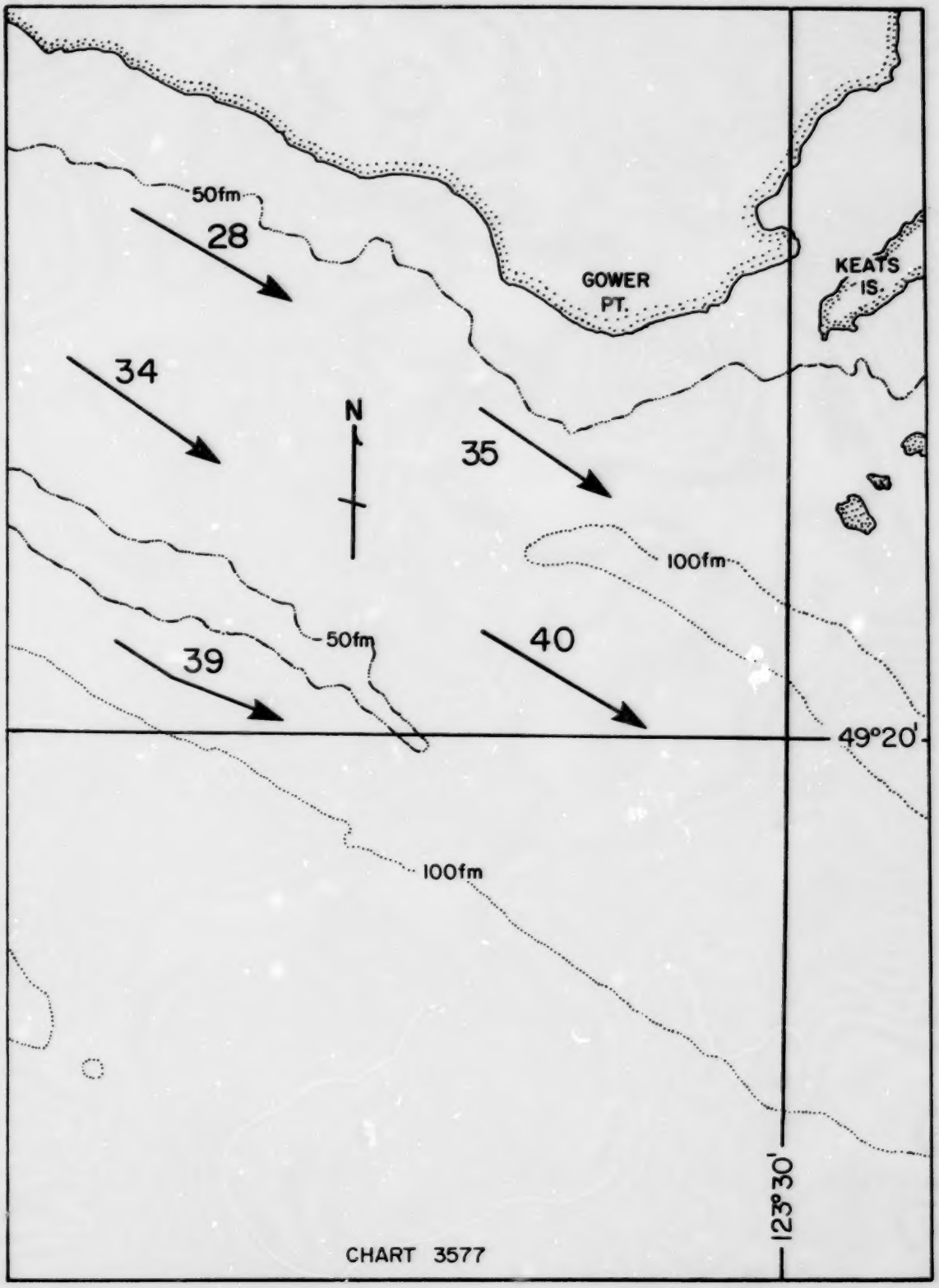


Fig. 8. Trawl tows off Sechelt.

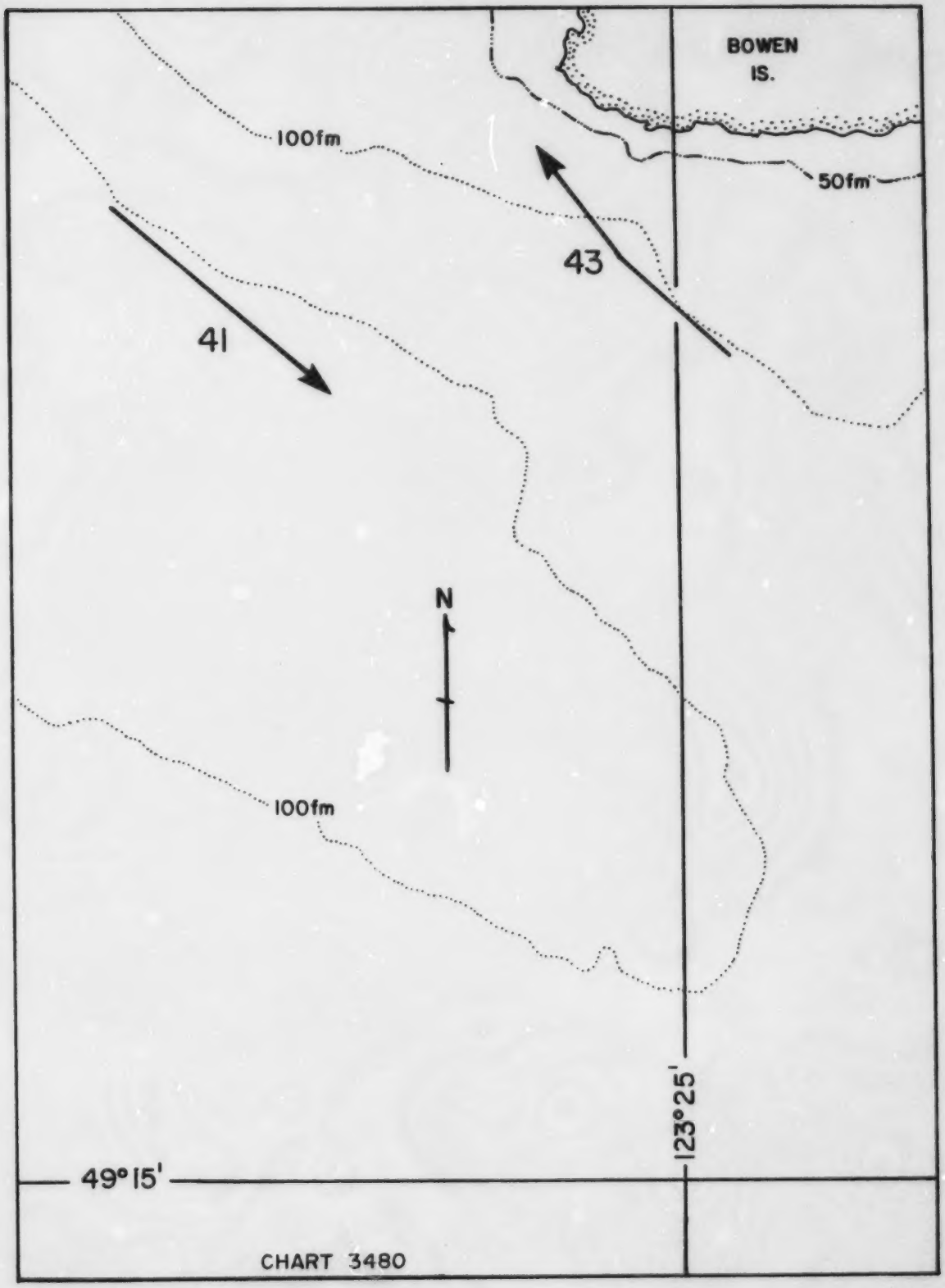


Fig. 9. Trawl tows off Bowen Island.

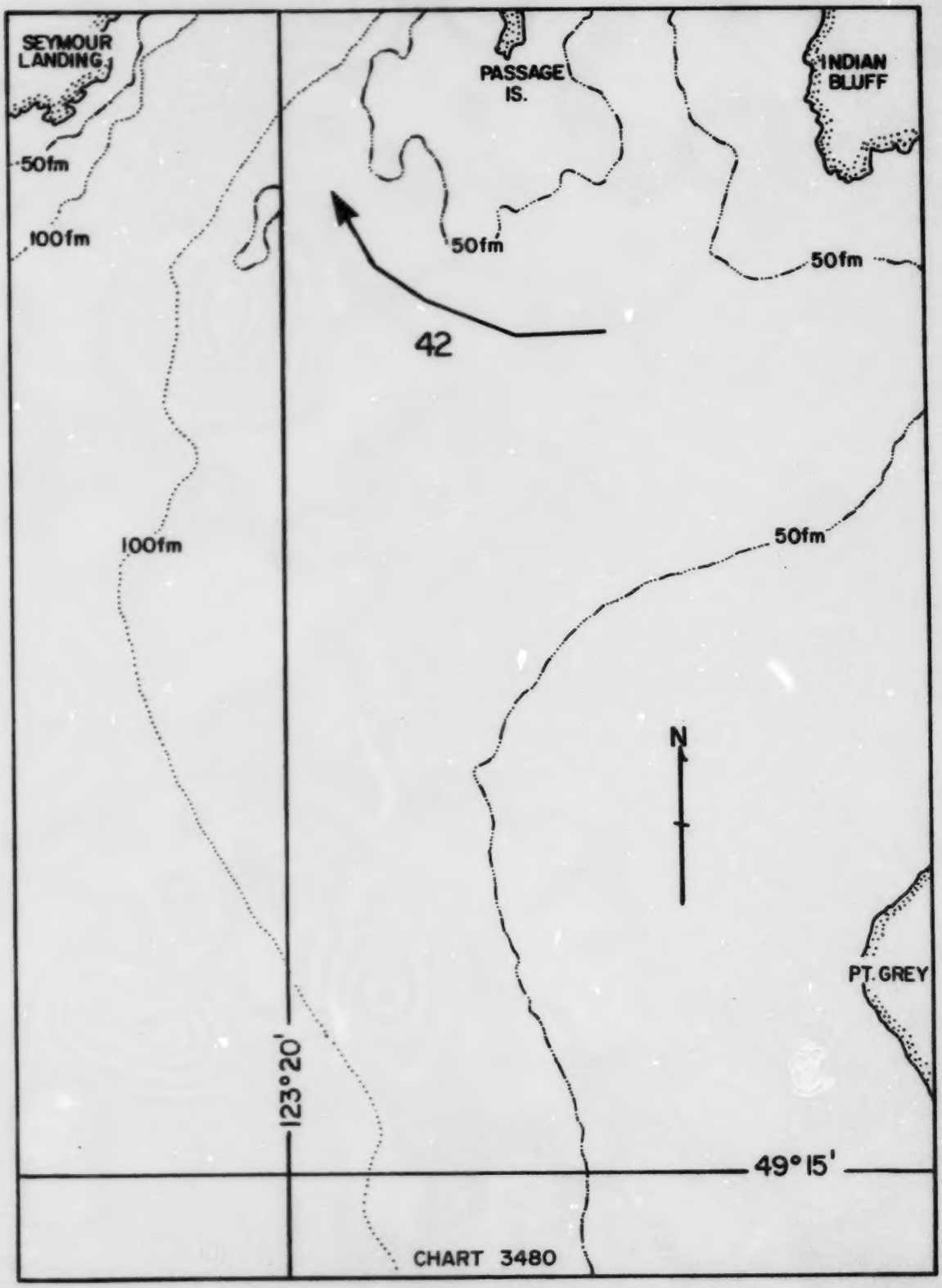


Fig. 10. Trawl tow off Passage Island.

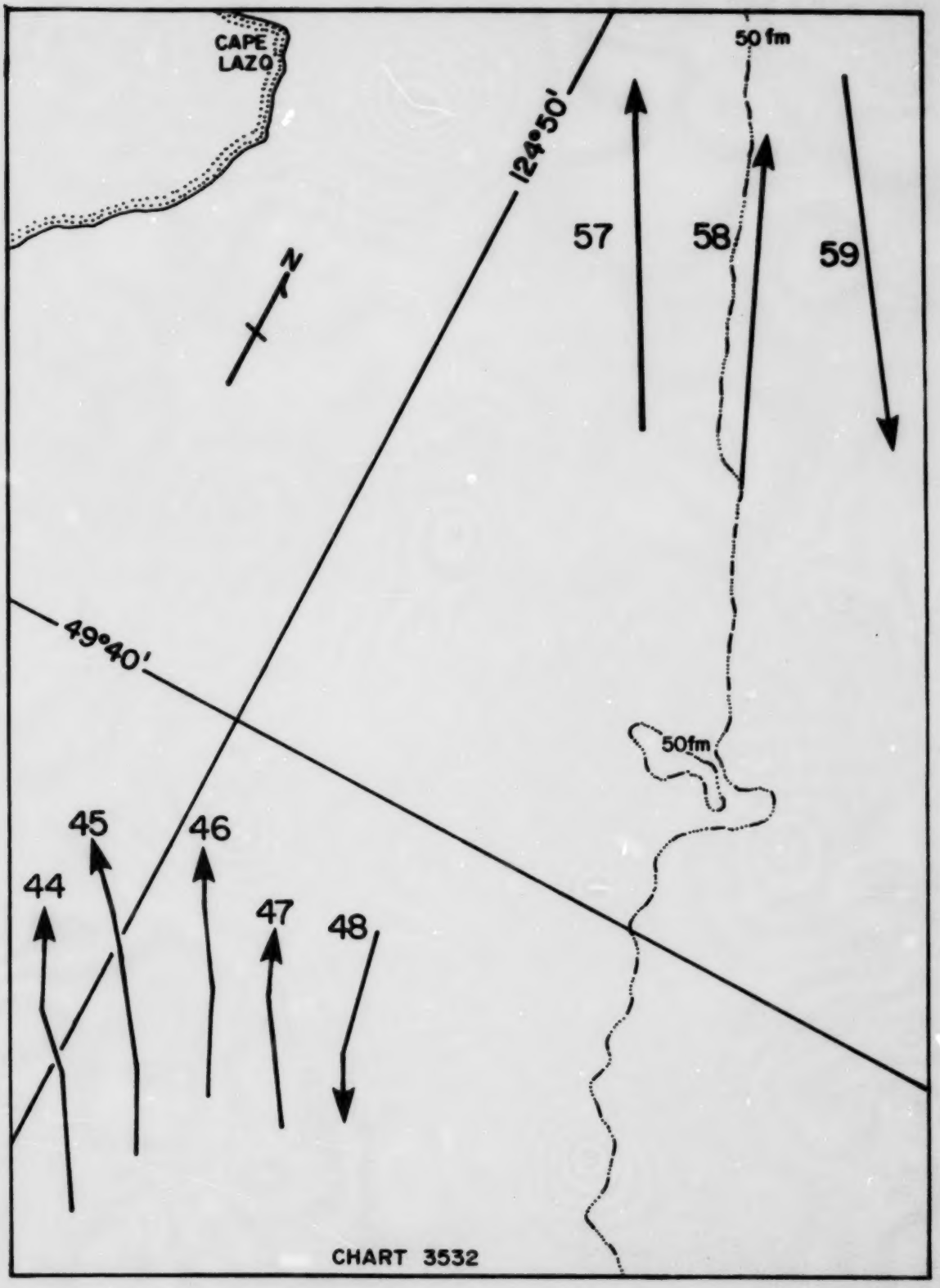


Fig. 11. Trawl tows off Comox.

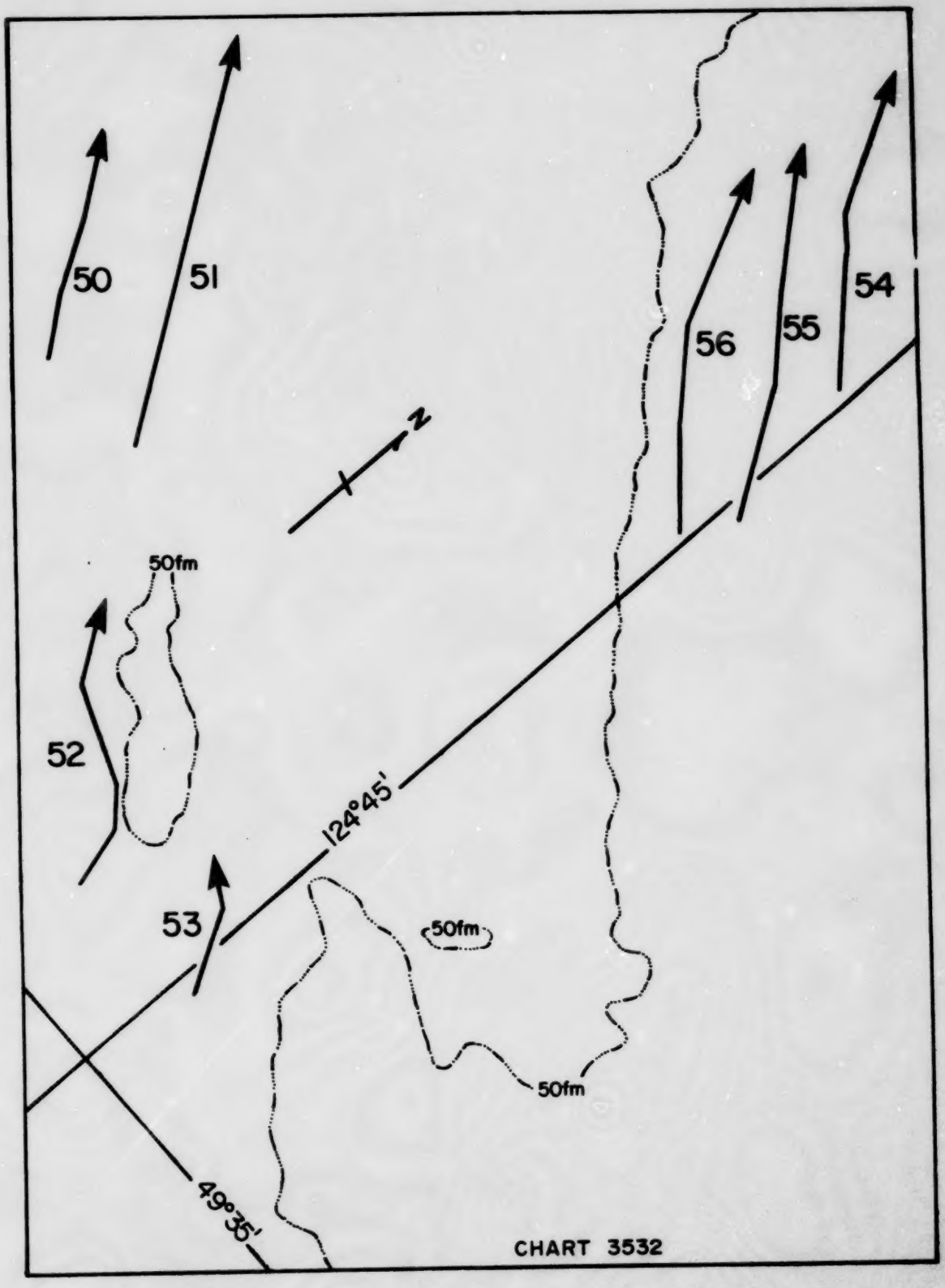


Fig. 12. Trawl tows off Comox.

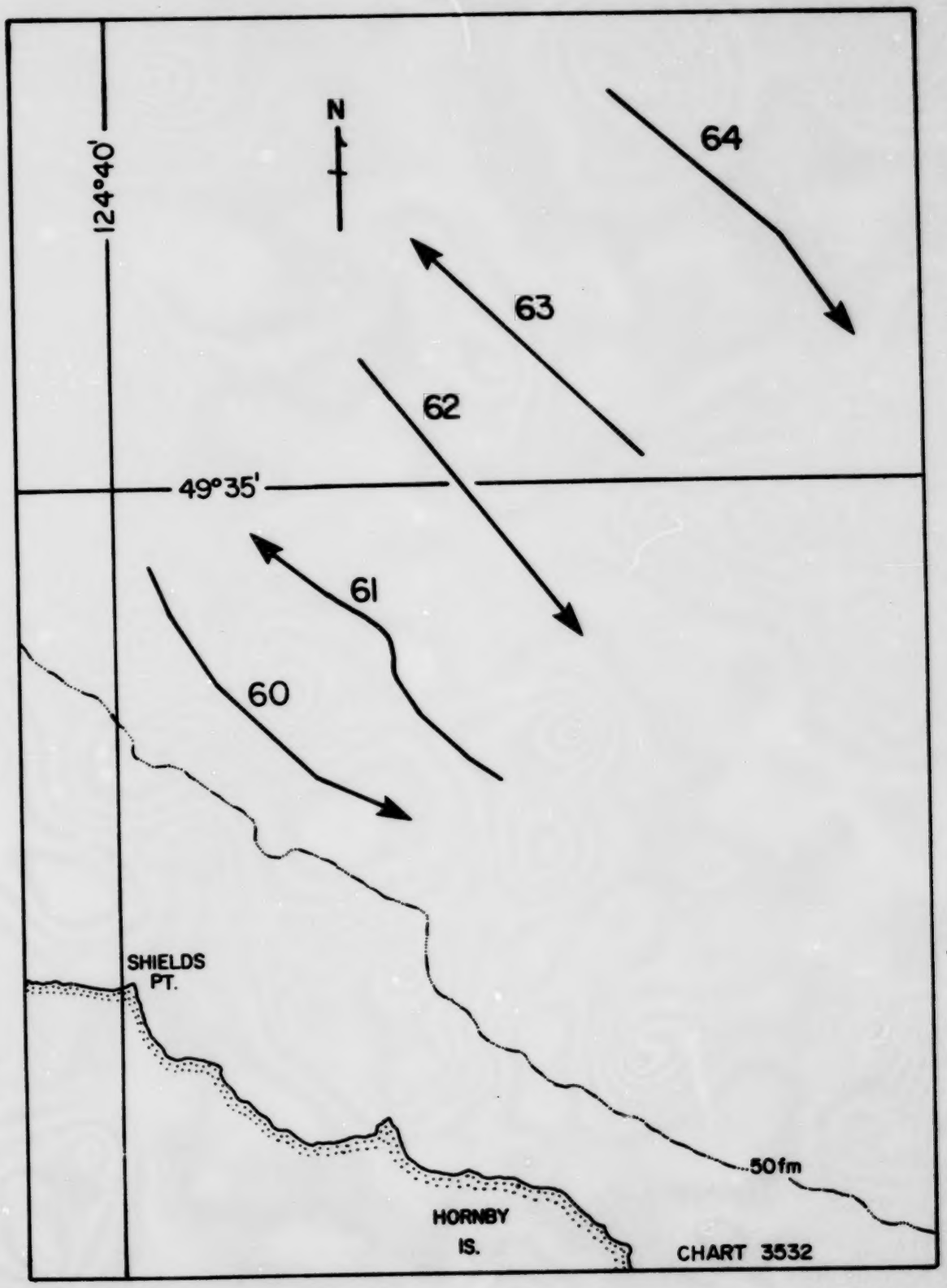


Fig. 13. Trawl tows off Hornby Island.

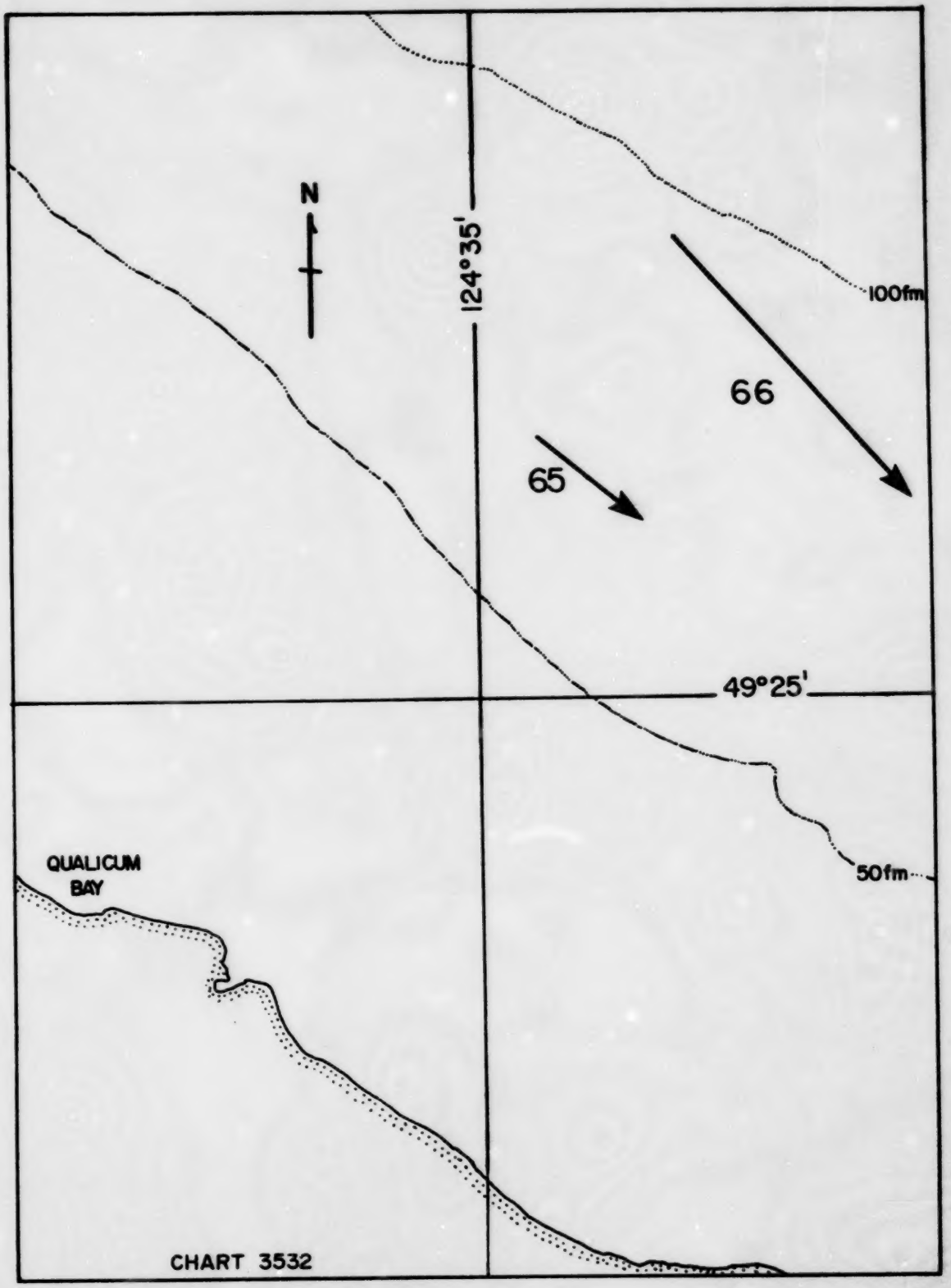


Fig. 14. Trawl tows off French Creek.

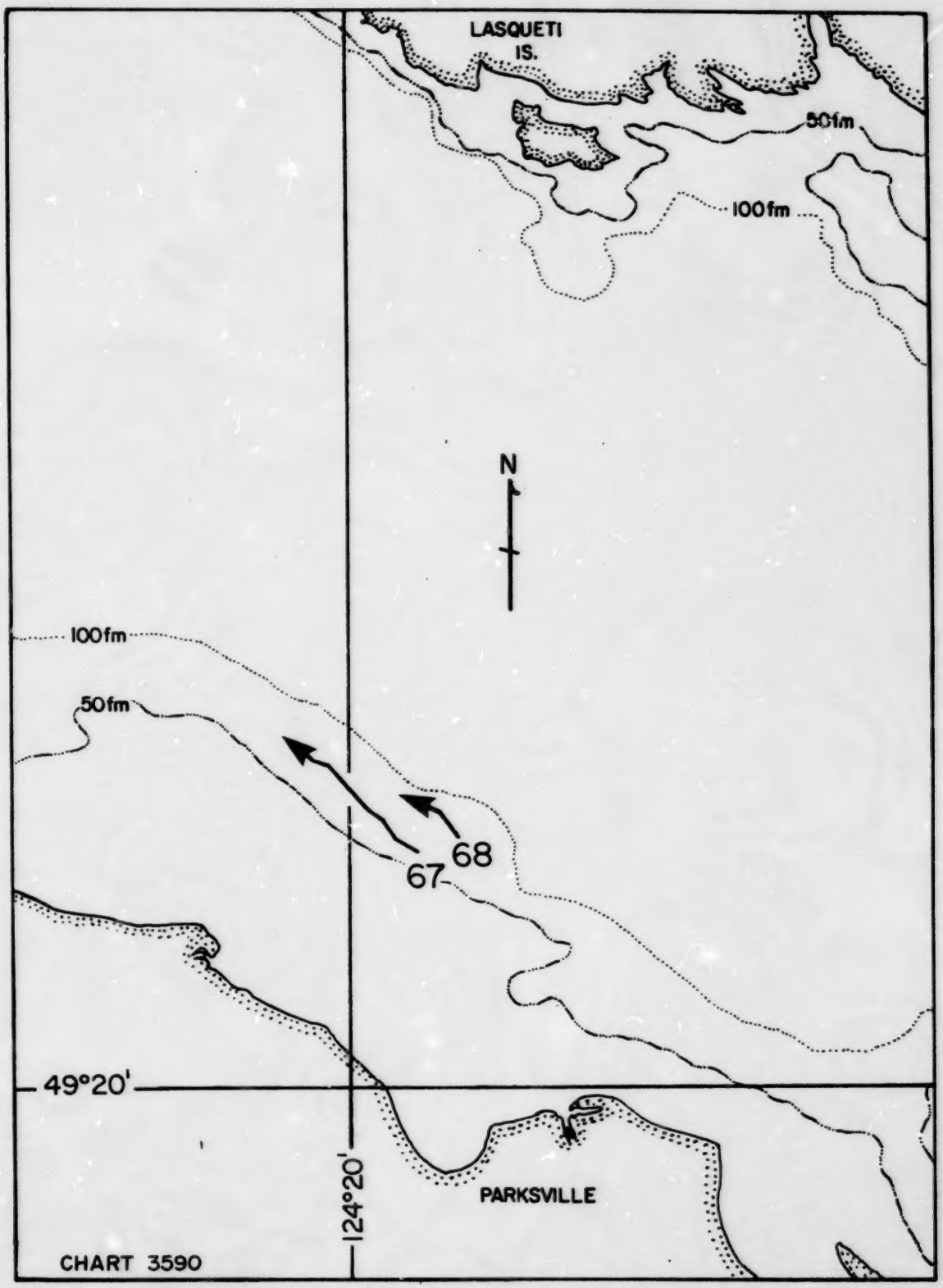


Fig. 15. Trawl tows off Qualicum.

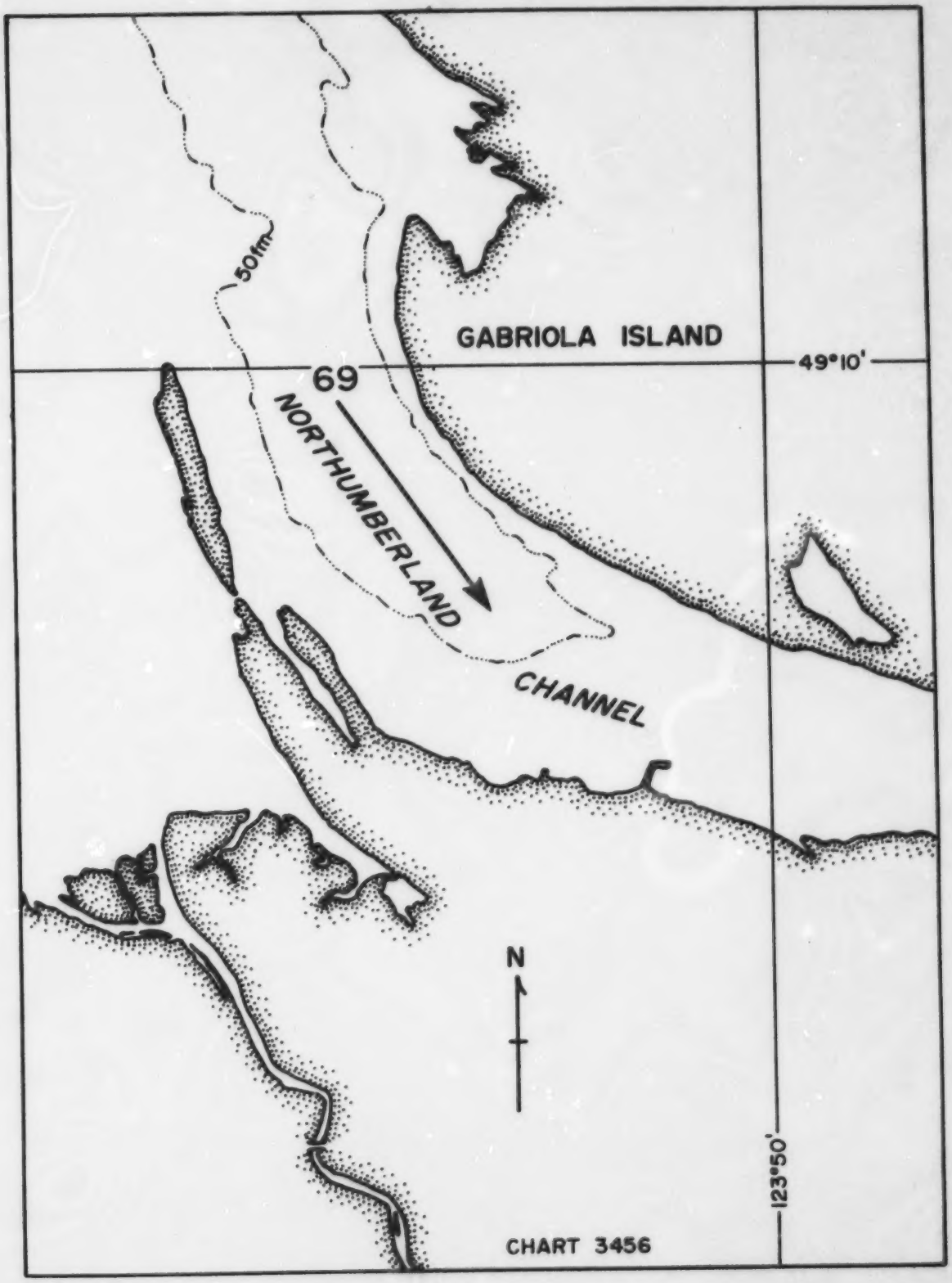


Fig. 16. Trawl tow in Northumberland Channel.

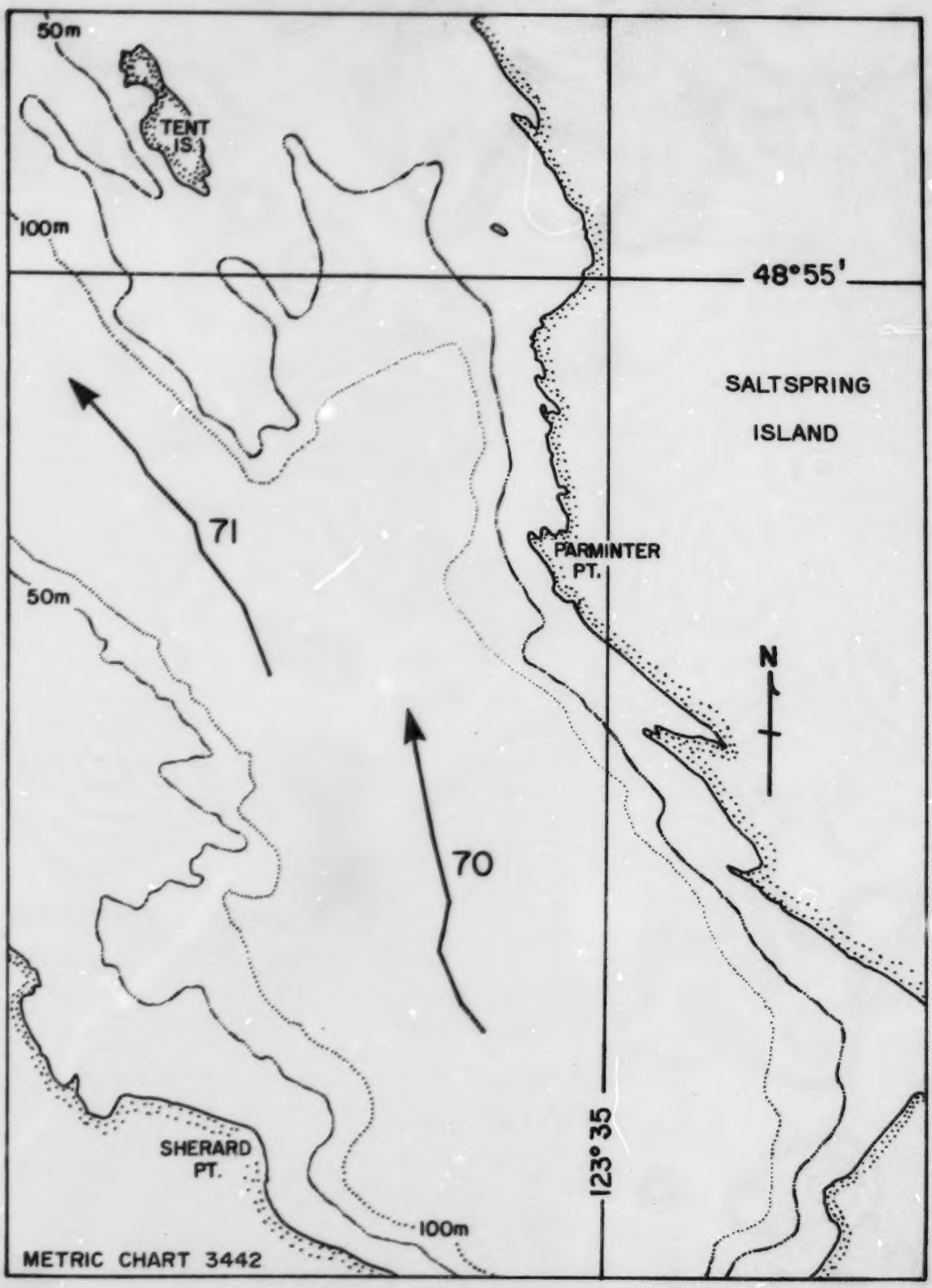


Fig. 17. Trawl tows in Stuart Channel.

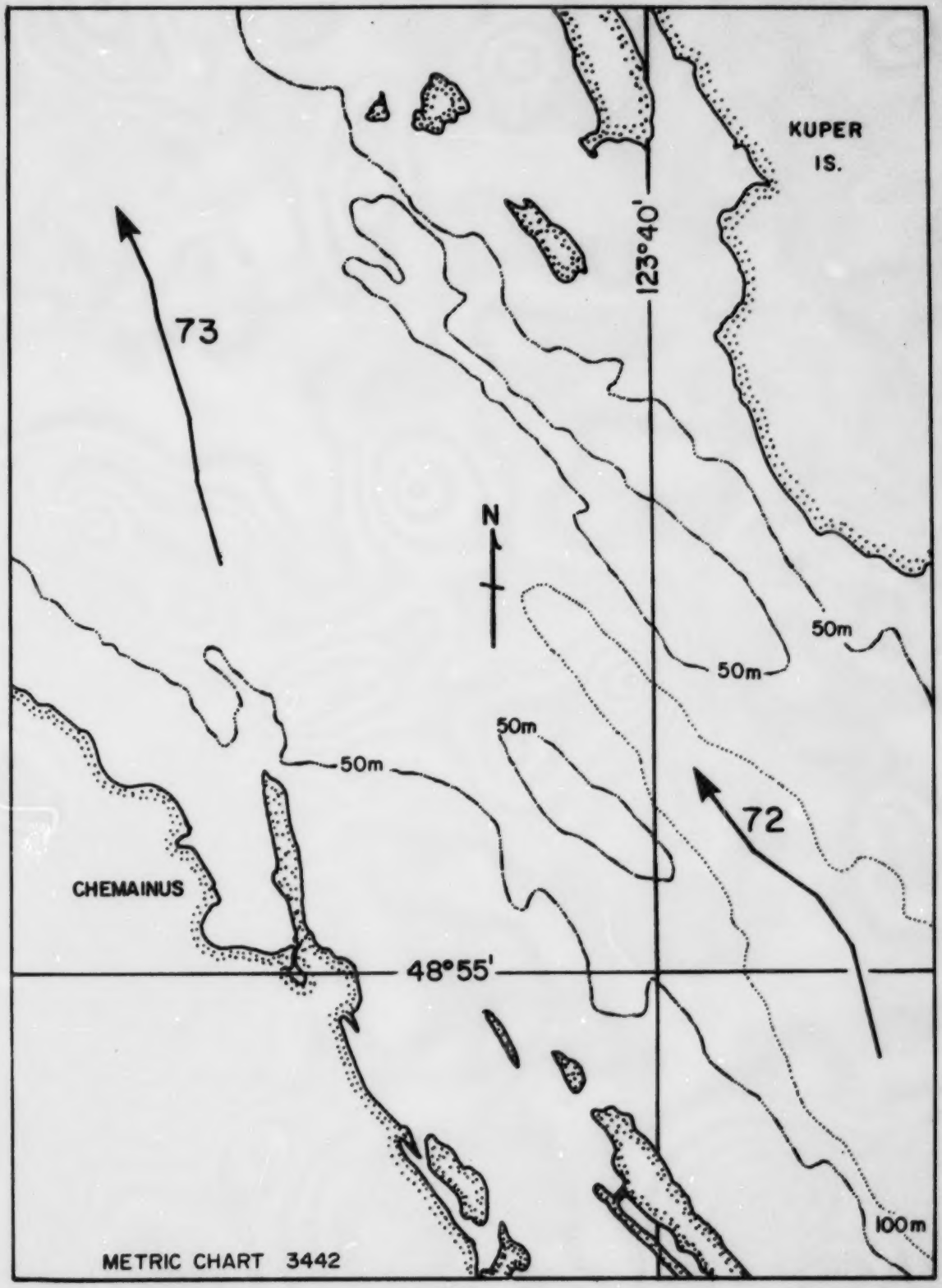


Fig. 18. Trawl tows in Stuart Channel.

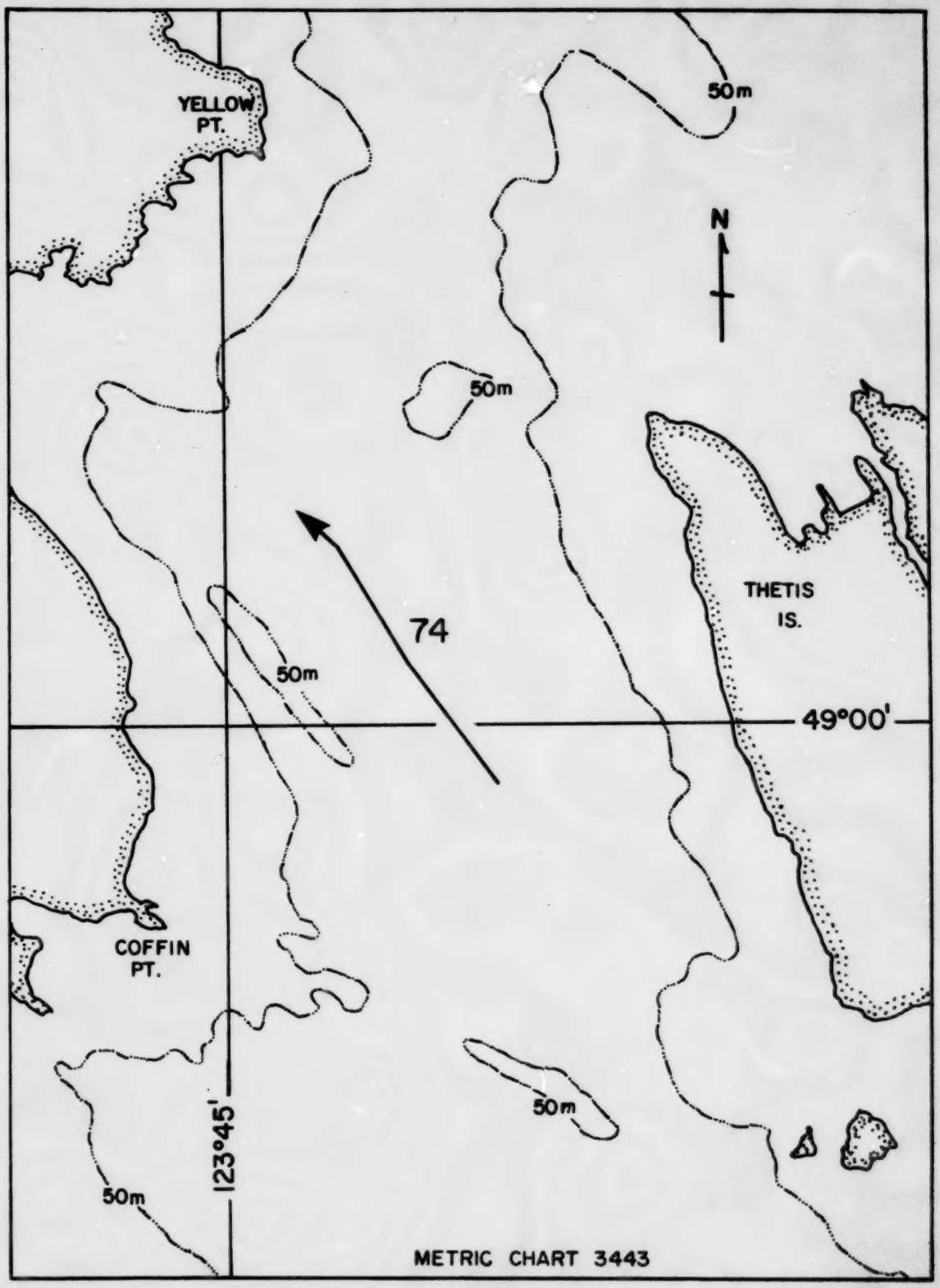


Fig. 19. Trawl tow in Stuart Channel.

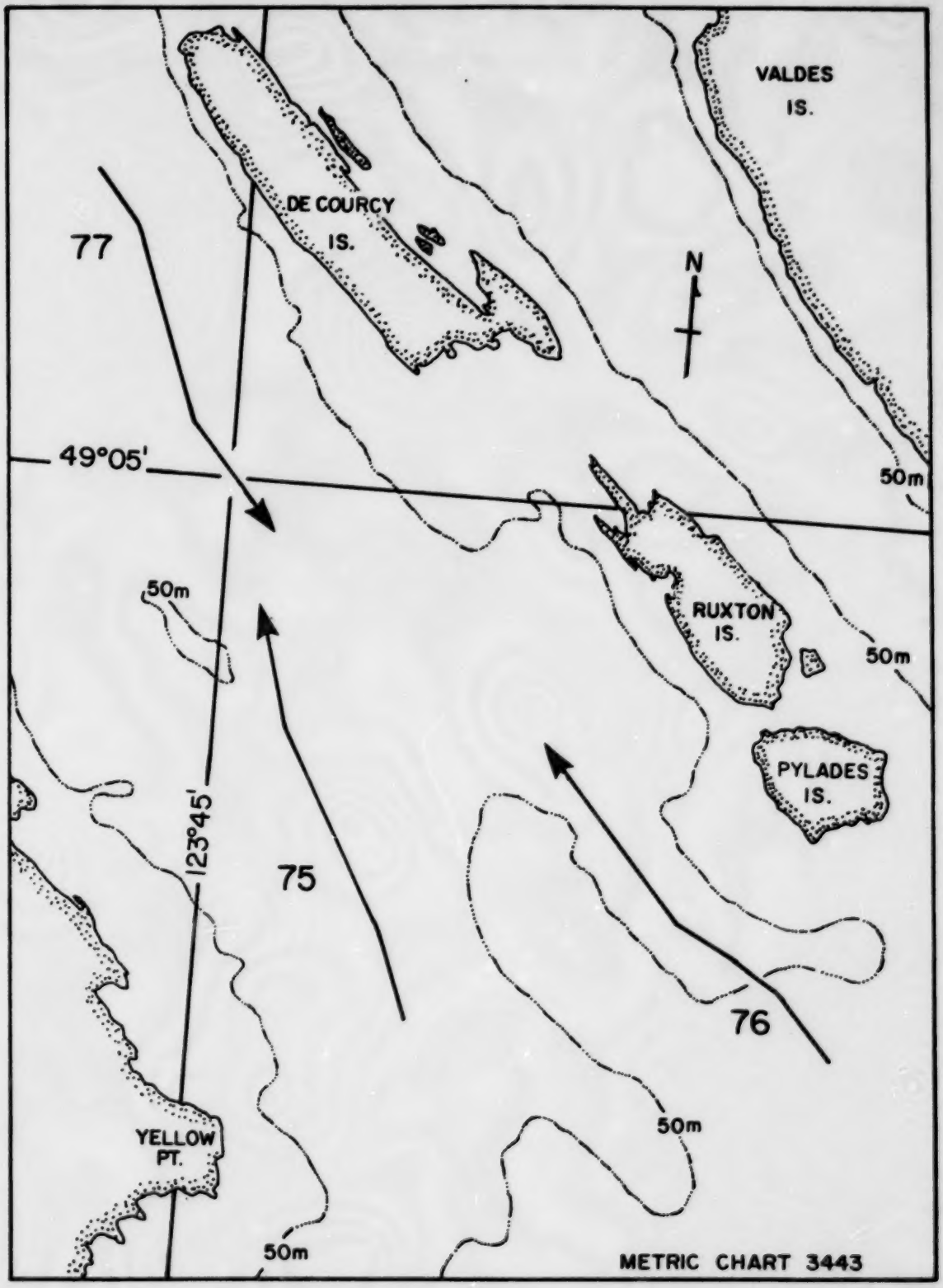


Fig. 20. Trawl tows in Stuart Channel.

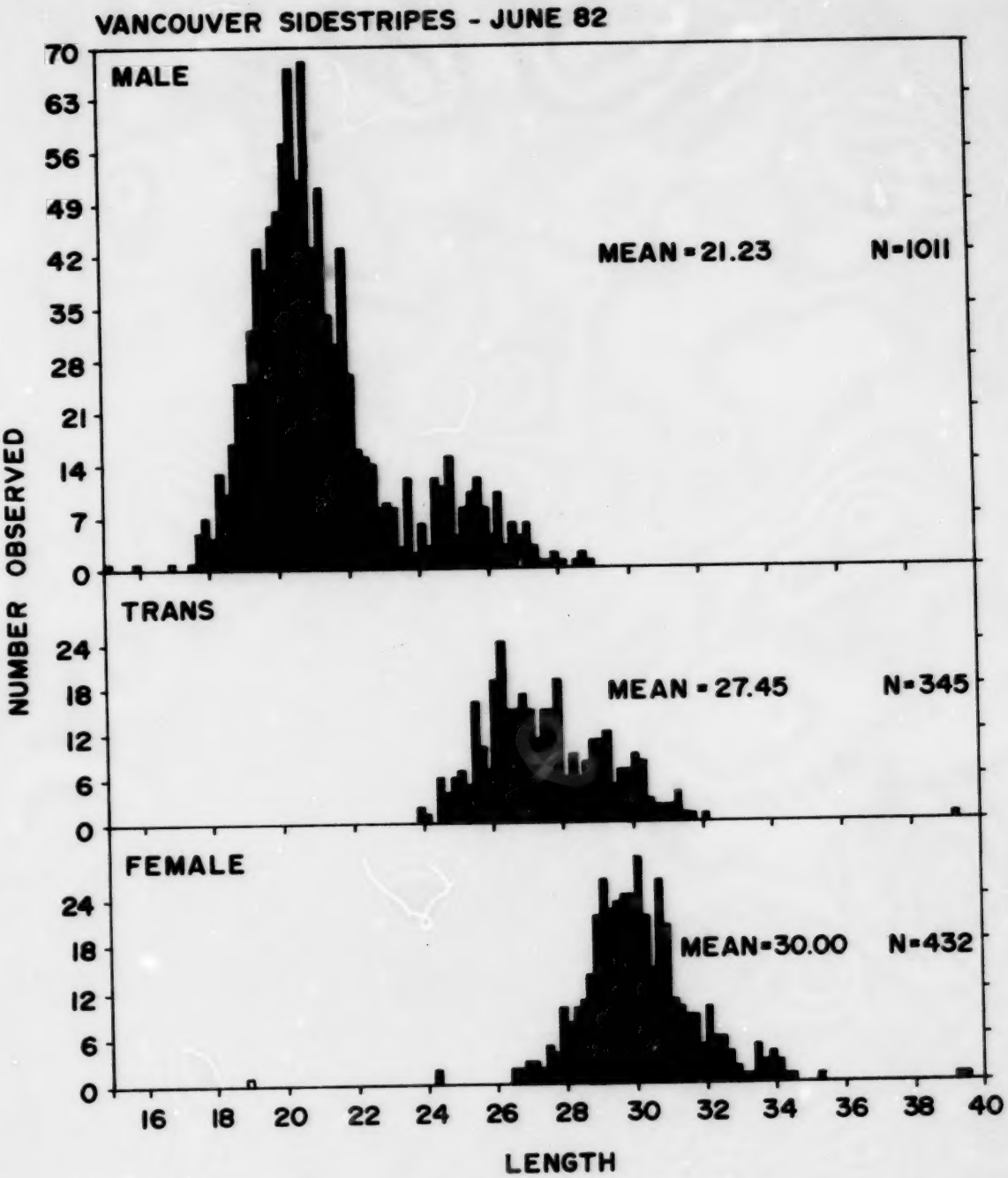


Fig. 21. Length frequency histogram of sidestripe shrimp in the Vancouver area.

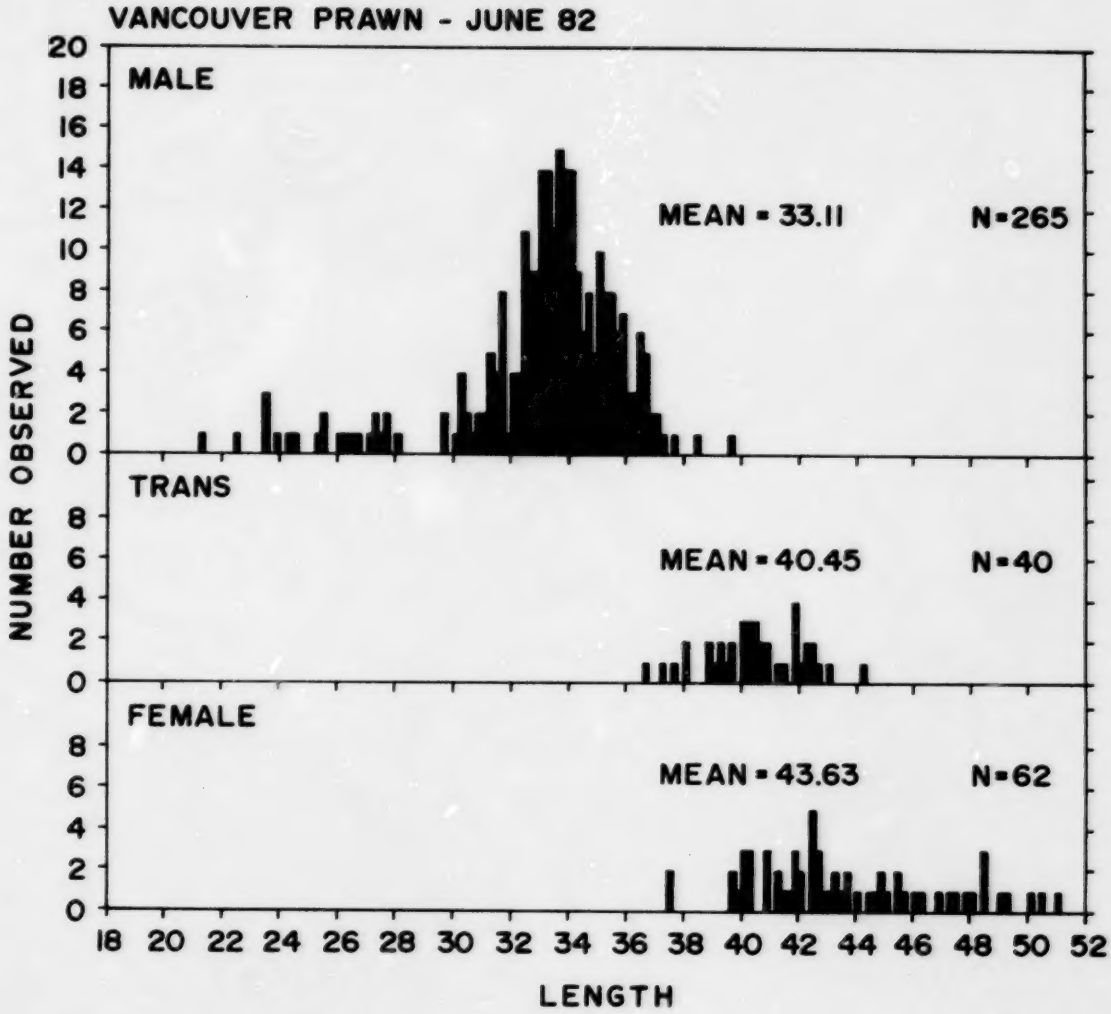


Fig. 22. Length frequency histogram of prawns in the Vancouver area.

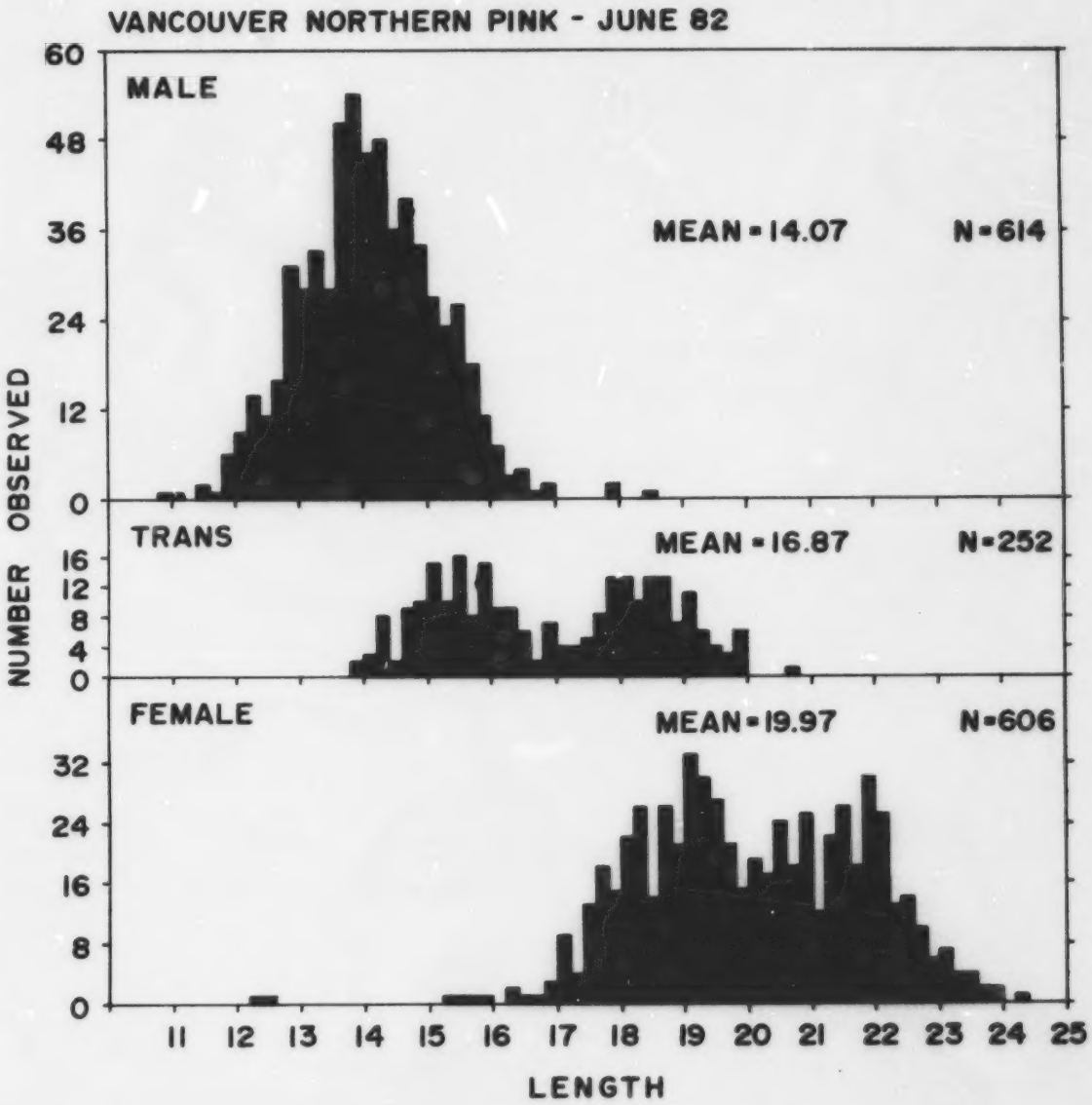


Fig. 23. Length frequency histogram of northern pink shrimp in the Vancouver area.

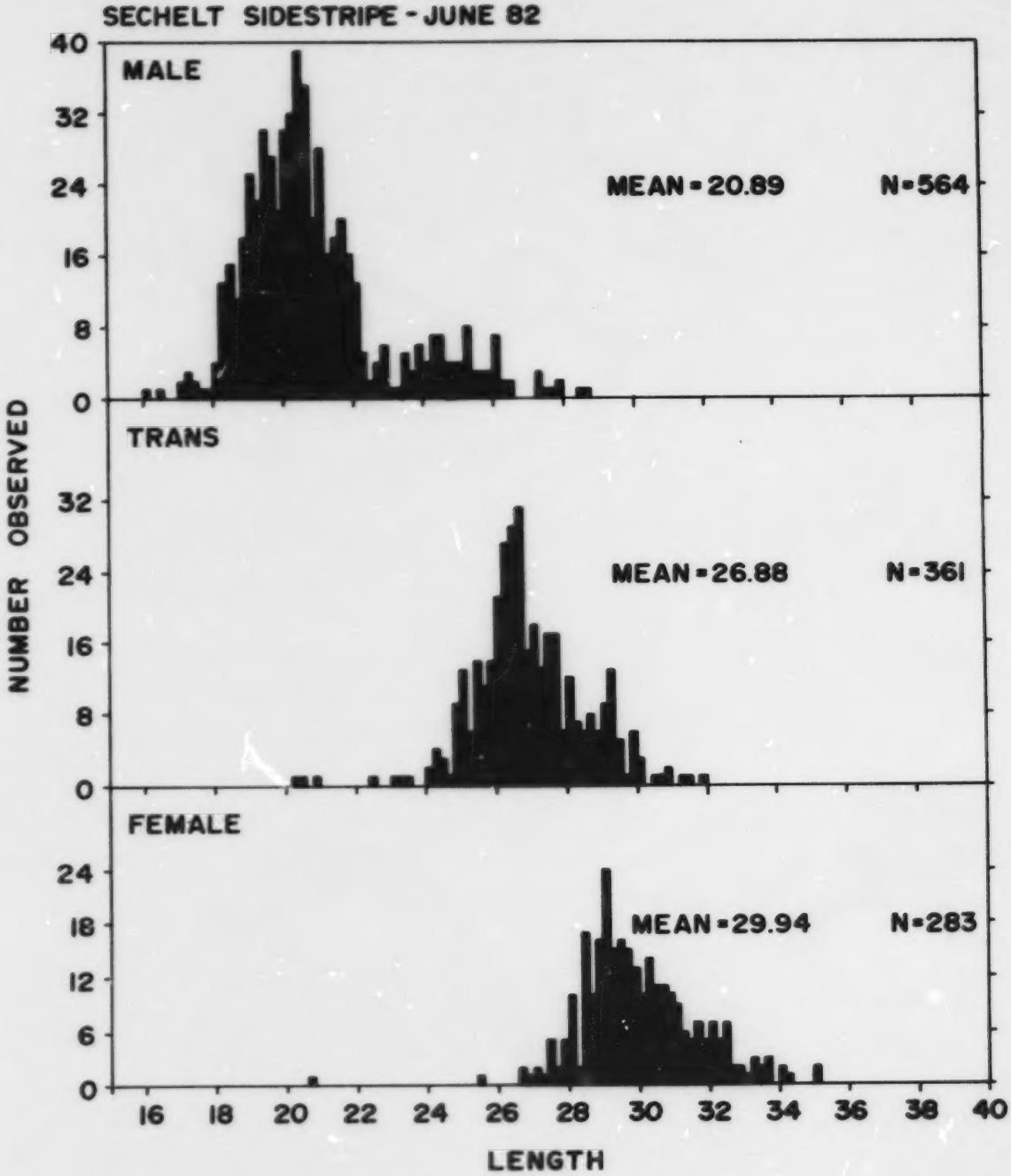


Fig. 24. Length frequency histogram of sidestripe shrimp in the Sechelt and Howe Sound area.

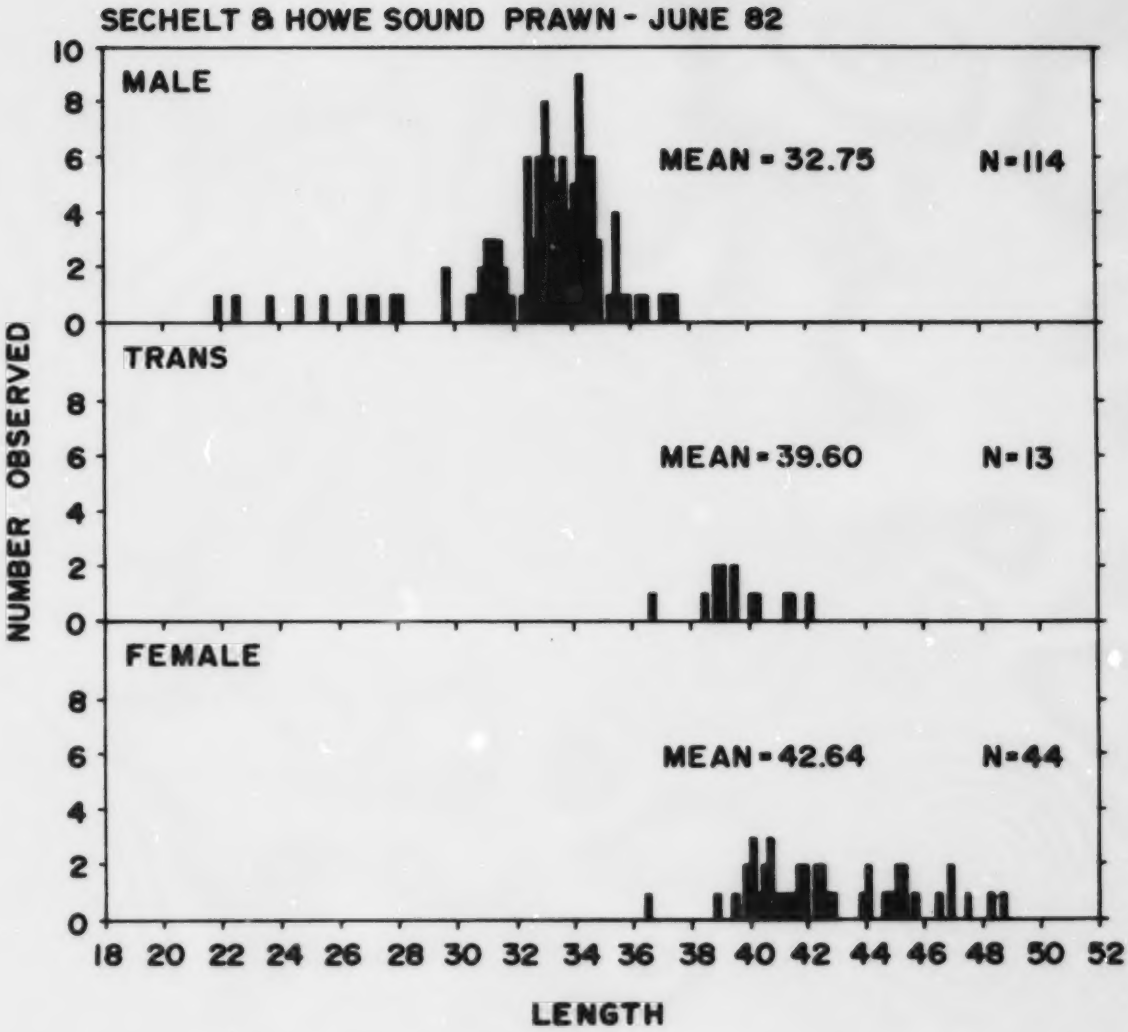


Fig. 25. Length frequency histogram of prawns in the Sechelt and Howe Sound area.

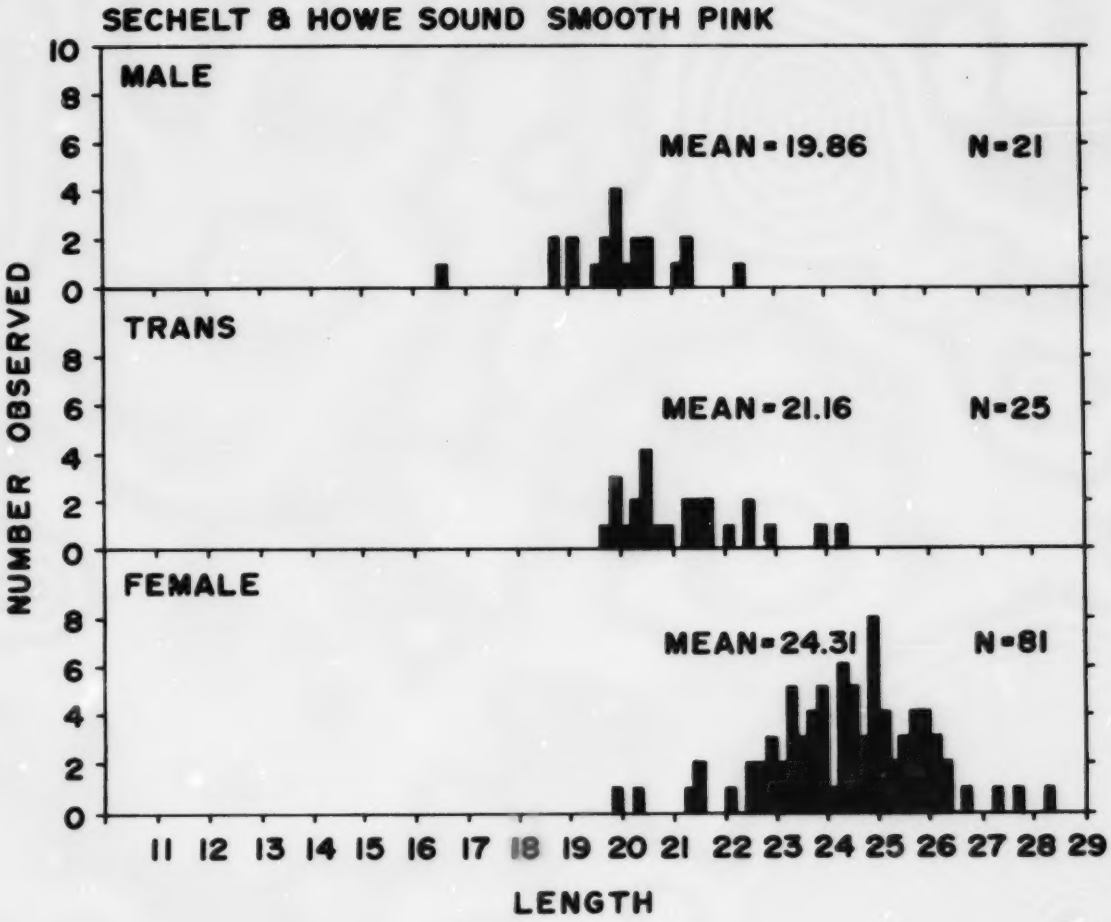


Fig. 26. Length frequency histogram of smooth pink shrimp in the Sechelt and Howe Sound area.

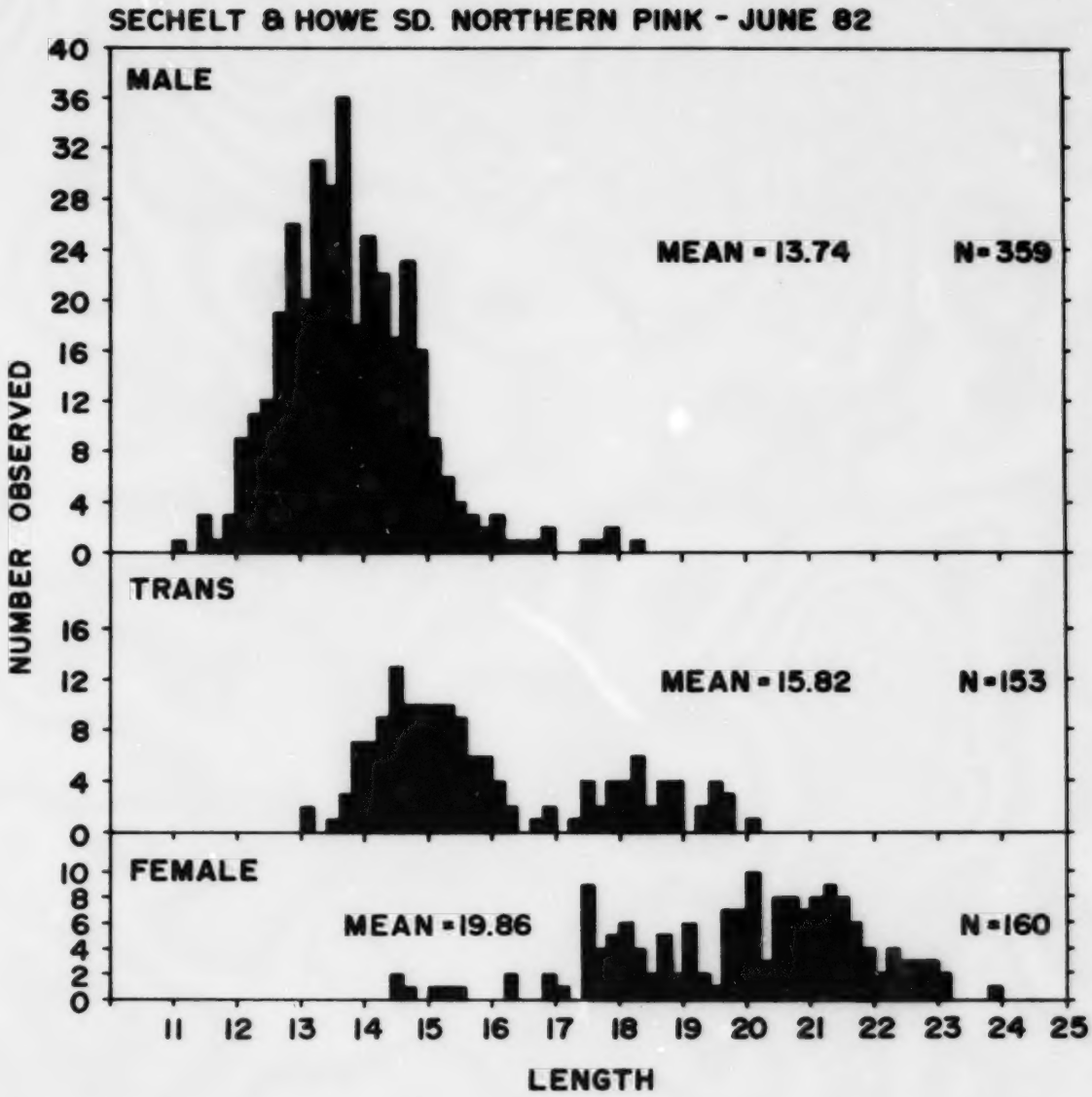


Fig. 27. Length frequency histogram of northern pink shrimp in the Sechelt and Howe Sound area.

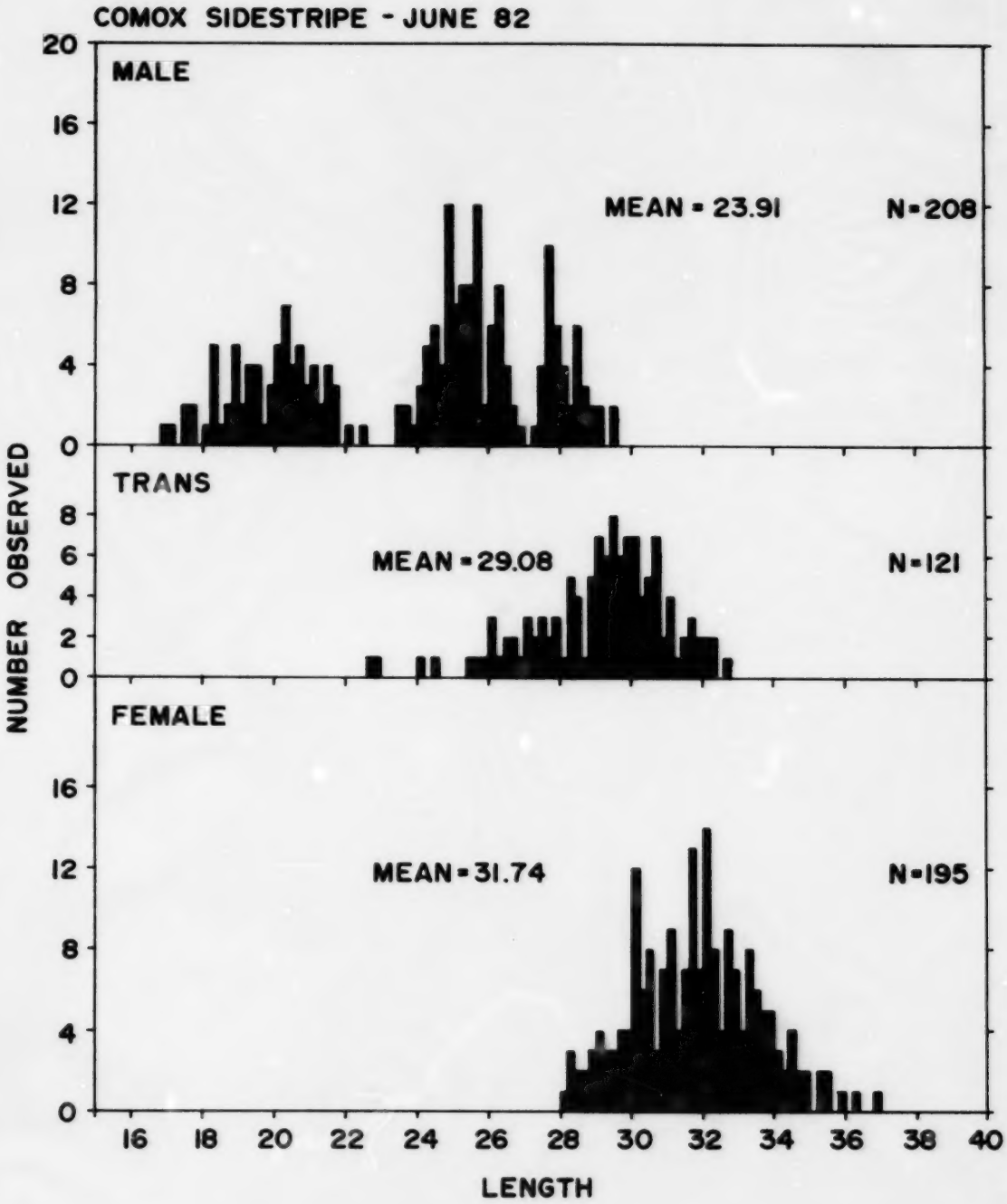


Fig. 28. Length frequency histogram of sidestripe shrimp in the Comox area.

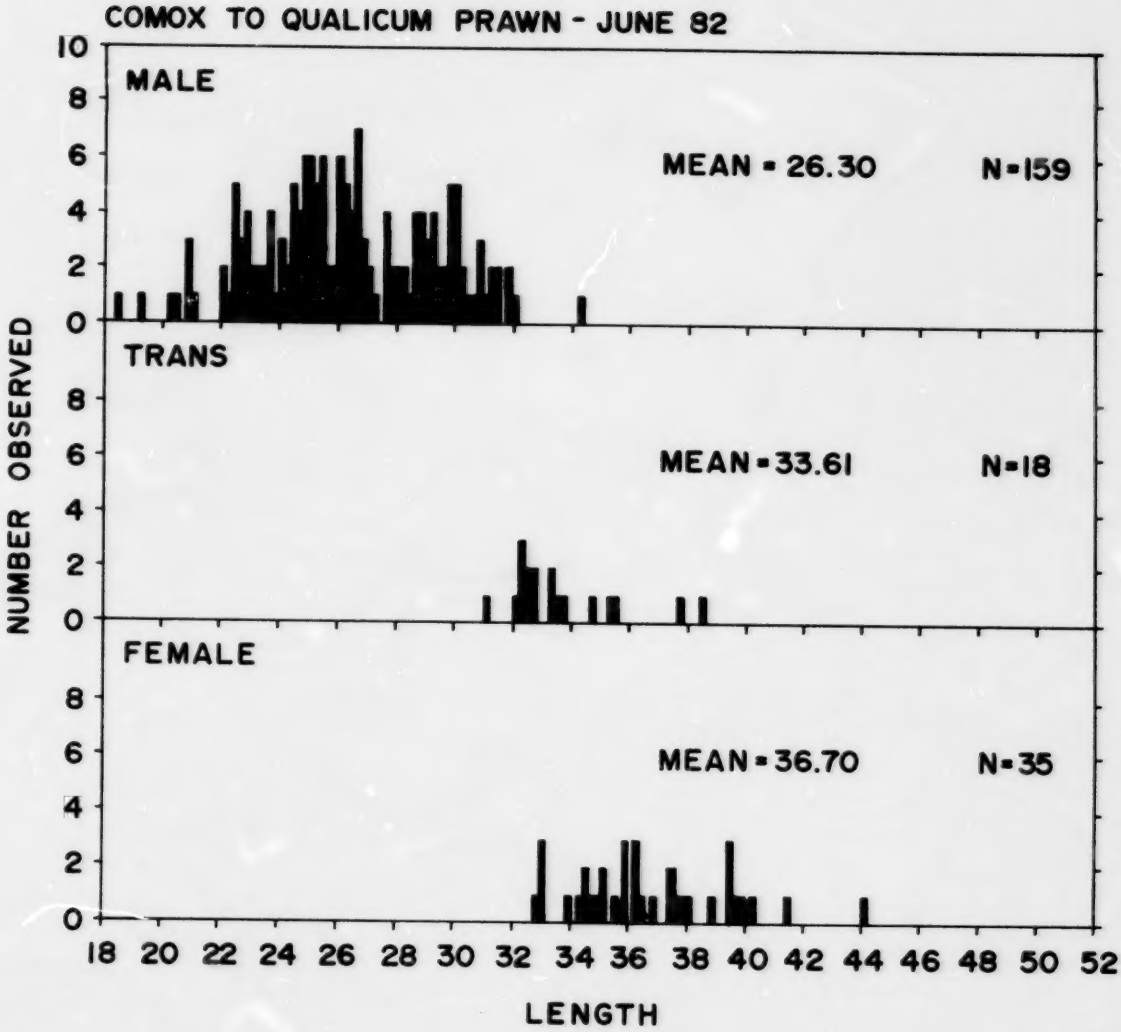


Fig. 29. Length frequency histogram of prawns in the Comox area.

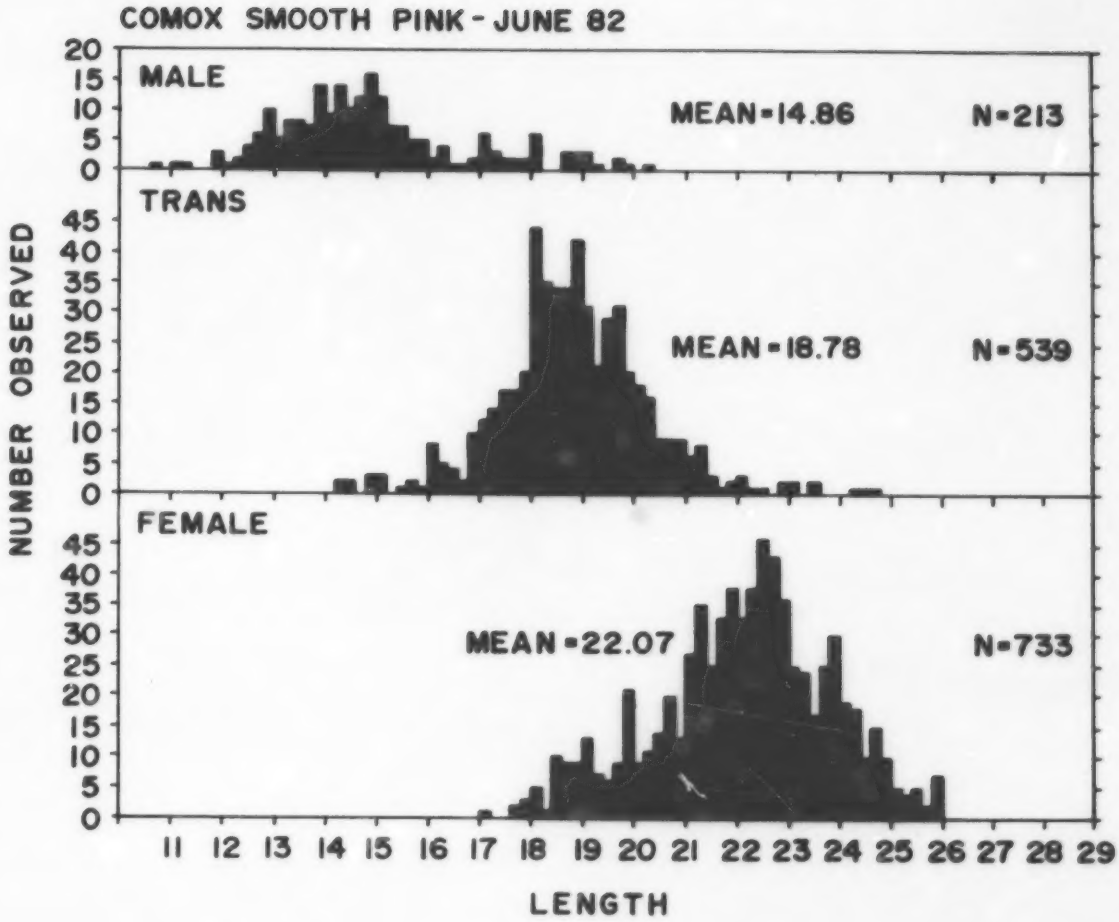


Fig. 30. Length frequency histogram of smooth pink shrimp in the Comox area.

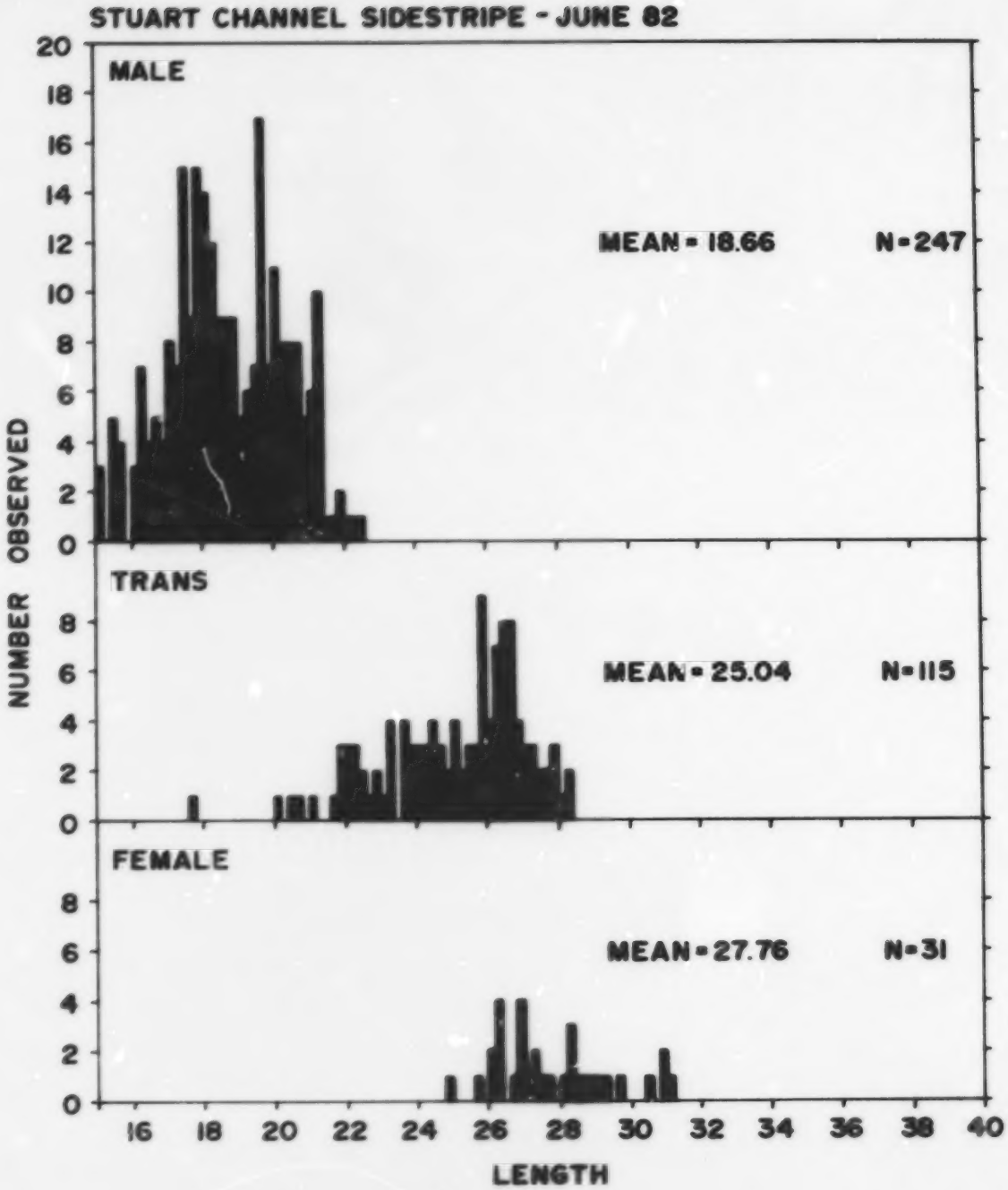


Fig. 31. Length frequency histogram of sidestripe shrimp in the Stuart Channel area.

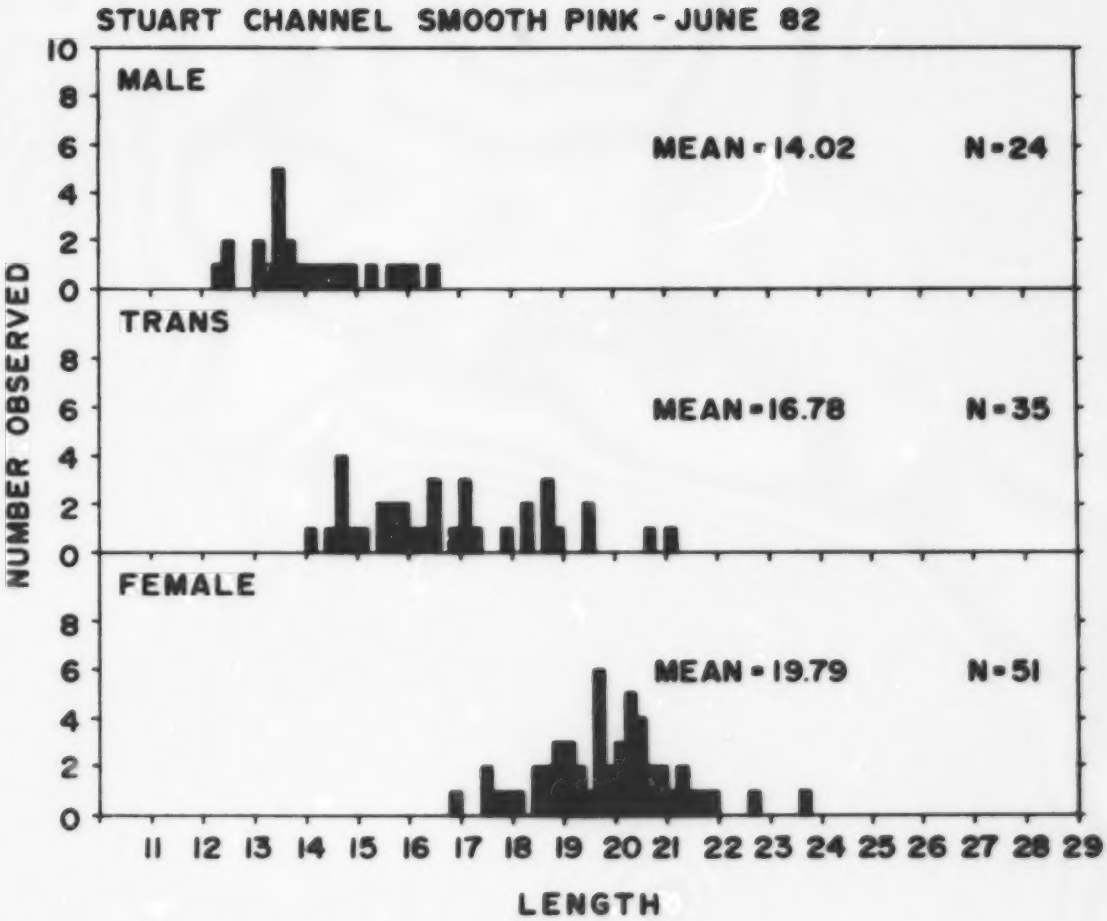


Fig. 32. Length frequency histogram of smooth pink shrimp in the Stuart Channel area.

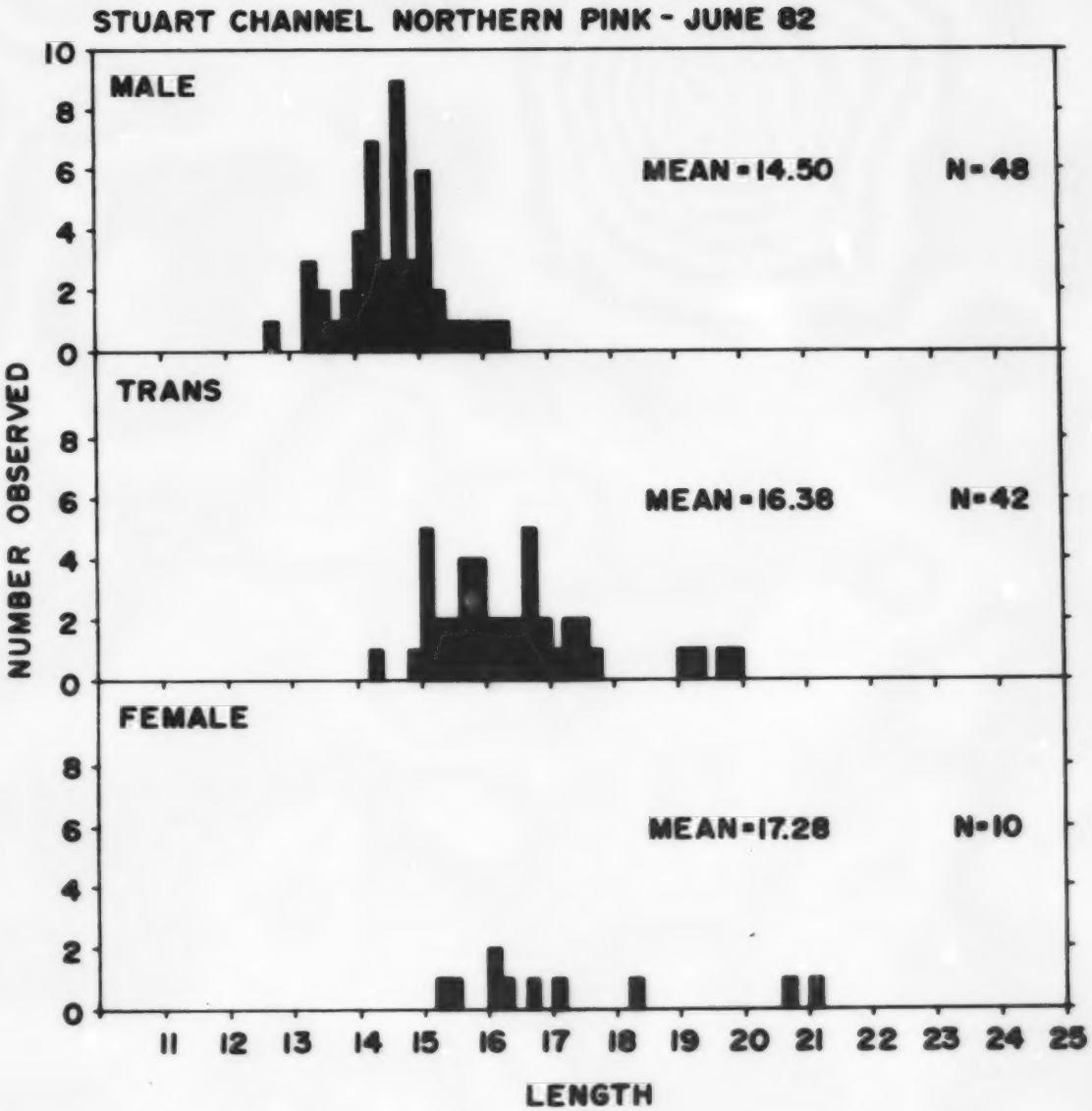


Fig. 33. Length frequency histogram of northern pink shrimp in the Stuart Channel area.

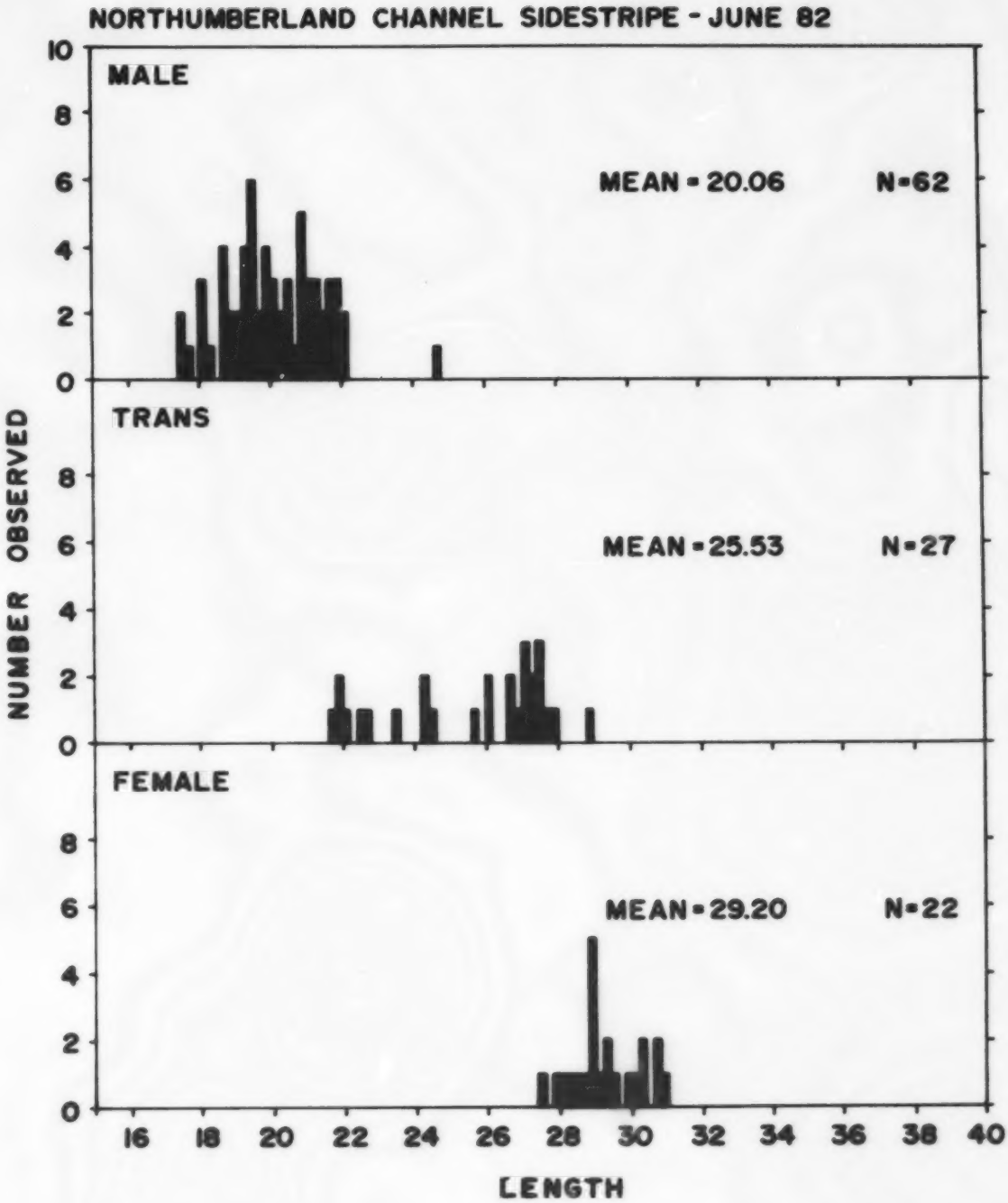


Fig. 34. Length frequency histogram of sidestripe shrimp in the Northumberland Channel area.

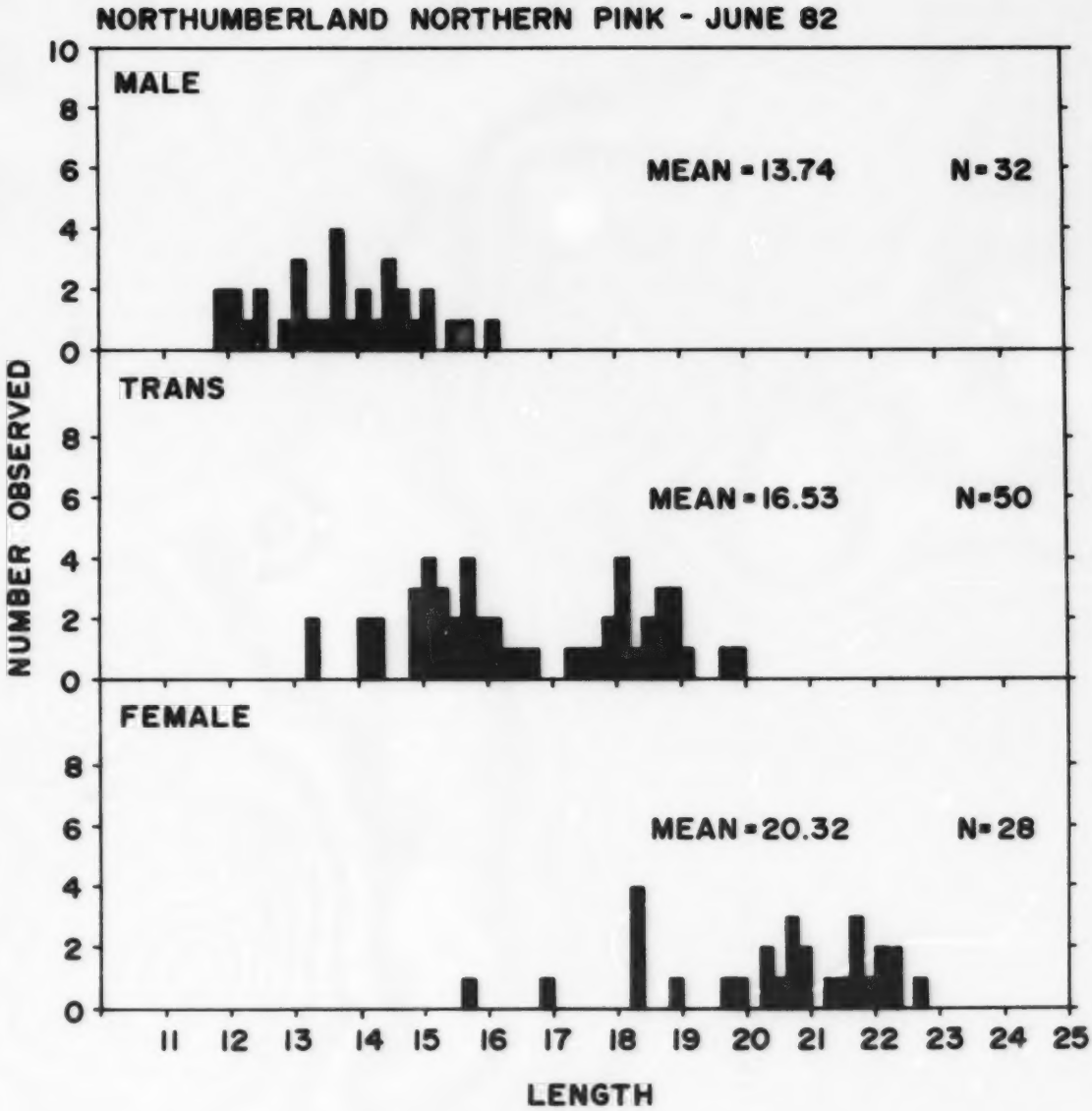


Fig. 35. Length frequency histogram of northern pink shrimp in the Northumberland Channel area.

Fig. 36. Catch curve for the Crofton, Stuart Channel area.

Fig. 37. Catch curve for Vancouver area.

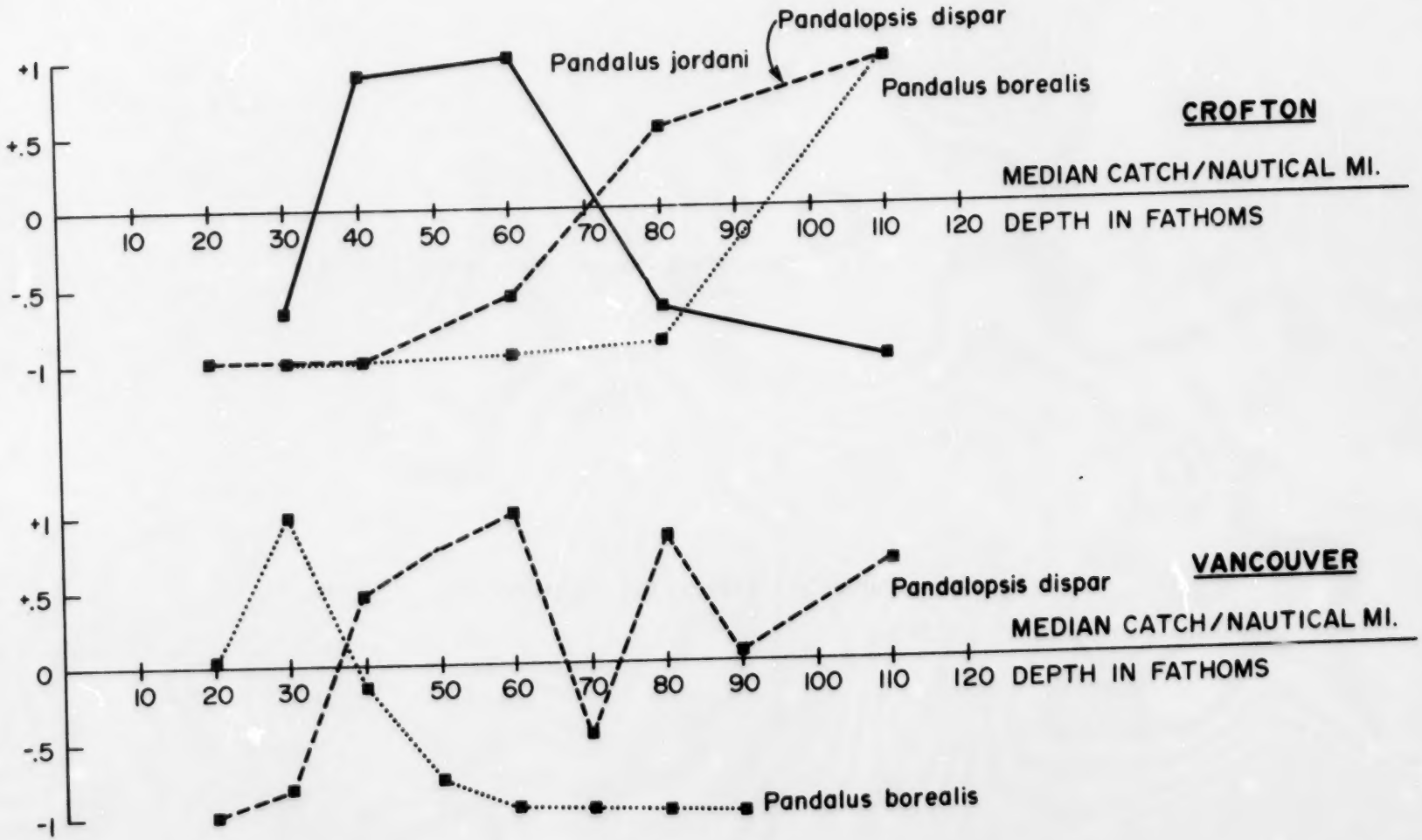
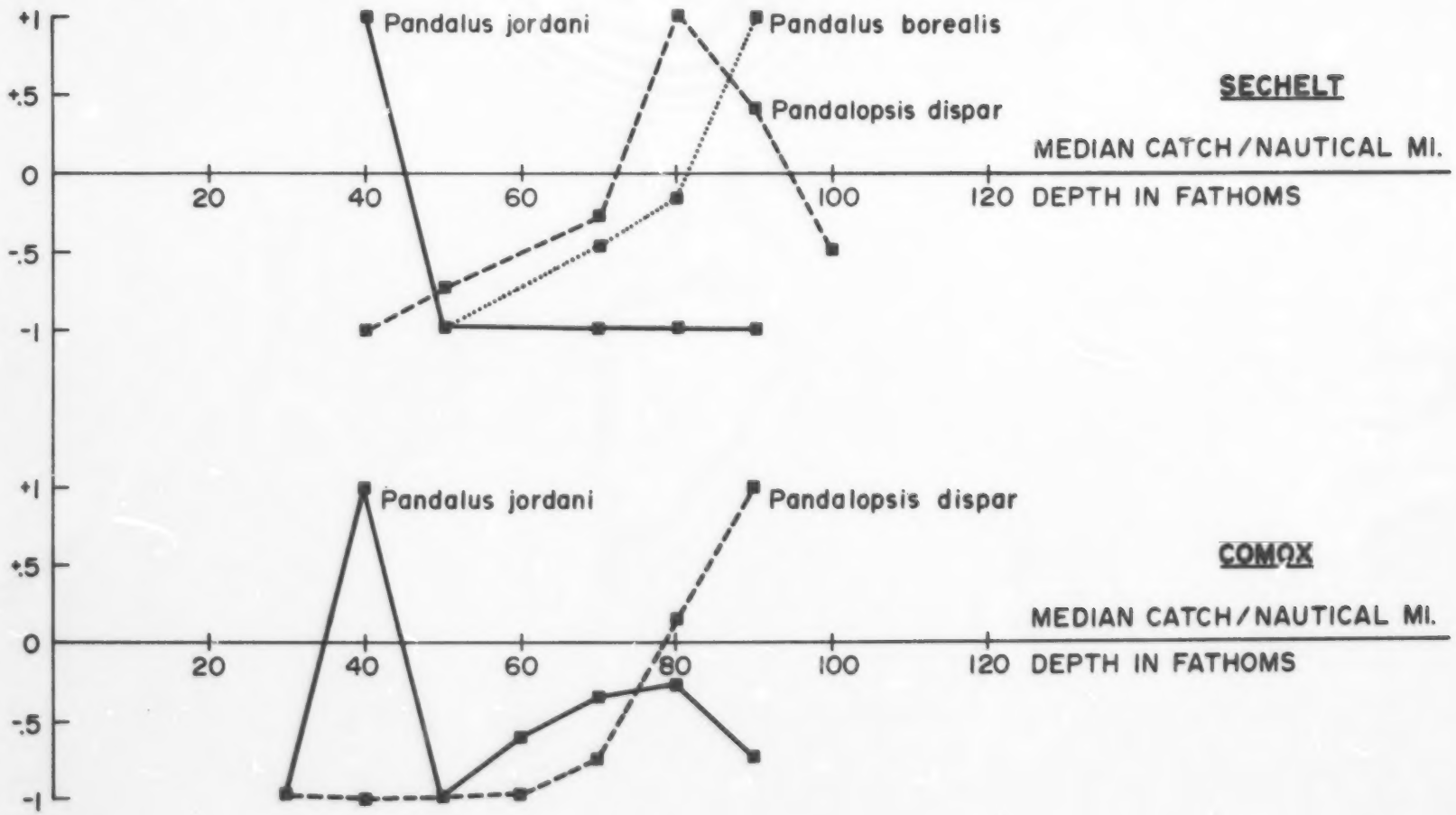

Pandalopsis dispar
Pandalus jordani
Pandalus borealis
CROFTON
MEDIAN CATCH/NAUTICAL MI.
DEPTH IN FATHOMS
+1
+.5
0
-.5
-1
10
20
30
40
50
60
70
80
90
100
110
120
VANCOUVER
Pandalopsis dispar
MEDIAN CATCH/NAUTICAL MI.
DEPTH IN FATHOMS
Pandalus borealis

Fig. Catch curve for the Sechelt - Howe Sound area.

Fig. 39. Catch curve for the Comox area.


Pandalus jordani
Pandalus borealis
Pandalopsis dispar
SECHELT
MEDIAN CATCH/NAUTICAL MI.
DEPTH IN FATHOMS
+1
+.5
0
-.5
-1
20
40
60
100
120
Pandalus jordani
Pandalopsis dispar
COMOX
MEDIAN CATCH/NAUTICAL MI.
DEPTH IN FATHOMS
+1
+.5
0
-.5
-1
20
40
60
80
100
120

APPENDIX 1

Appendix table 1. G.B. REED shrimp survey June 1982 Georgia Strait. See footnote at end of table for explanation of terms.

HAUL NO.	1	2	3	4	5	6
DATE	JUNE 2	JUNE 2	JUNE 2	JUNE 2	JUNE 2	JUNE 2
AREA	BRIN	BRIN	BRIN	BRIN	BRIN	BRIN
TIME START (PST)	755	854	1115	1232	1400	1603
DURATION(HR.MIN)	.21	.29	.30	.25	.30	.32
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	19.4	19.4	19.3	19.3	19.3	19.4
W. LONG. (DEG)	123	123	123	123	123	123
(MIN)	13.8	14.6	15.4	16.7	16.1	16.5
DIRECTION (DEG.TRUE)	215	170	0	110	98	80
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	18.4	18.1	18.5	18.9	18.4	19.5
W.LONG. (DEG)	123	123	123	123	123	123
(MIN)	14.7	15.7	15.3	14.8	15.4	14.6
DISTANCE NAUT. MI.	1.1	1.4	1.4	1.3	1.5	1.2
DEPTH (FATHOMS)	35- 42	46- 46	54- 49	62- 44	60- 50	47- 47
SEE FIGURE NO.	2	2	2	2	2	2
SURFACE TEMP(DEG.C)	13.3	..	..	12.7	..	..
BOTTOM TEMP.(DEG.C)	8.6	..	..	8.5	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	2	111	117	38	46	161
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	1	2	3	4	5	6
DATE	JUNE 2	JUNE 2	JUNE 2	JUNE 2	JUNE 2	JUNE 2
AREA	BRIN	BRIN	BRIN	BRIN	BRIN	BRIN
CATCH TOTAL (KG)	2	111	117	38	46	161
SHRIMP						
PINK (BOREALIS)	..	16	7	1	6	22
NUM/KG	..	252	216	244	244	324
PINK (JORDANI)	..	..	..	..	..	..
NUM/KG	..	..	..	..	..	..
PRAWN	..	T	T	T	1	T
NUM/KG	..	37	47	..	33	..
SIDESTRIPE	..	8	6	1	4	9
NUM/KG	..	104	96	95	98	72
OTHER SHRIMP	..	T	..	..	..	..
INVERTBRATES						
JELLYFISH	2	1	..	..	T	..
SQUID	..	T	1	T	..	1
HEART URCHIN	..	..	..	..	..	..
C. MAGISTER	..	..	..	..	..	..
OTHERS	..	..	T	..	T	T
FLATFISH						
ENGLISH SOLE	..	..	..	..	..	..
FLATHEAD SOLE	..	..	..	..	..	..
SLENDER SOLE	..	1	T	T	T	2
OTHERS	..	T	T	..	T	1
ROCKFISH						
S. DIPLOPROA	..	..	..	..	..	..
OTHERS	..	..	1	T	1	3
OTHER ROUNDFISH						
HAKE	T	24	26	11	11	49
HERRING	..	..	..	..	T	..
LINGCOD	..	2	2	..	..	5
MIDSHIPMAN	..	2	2	T	2	1
PACIFIC COD	..	5	11	8	..	2
WALLEYE POLLOCK	..	5	3	2	..	..
OTHERS	..	T	1	T	T	T
SELACHI						
DOGFISH	..	41	15	5	13	19
RATFISH	..	6	42	10	8	46
SKATES	..	..	..	..	..	1
OTHERS	..	T	T	..	..	..

Appendix table 1 (cont'd)

HAUL NO.	7	8	9	10	11	12
DATE	JUNE 2	JUNE 3	JUNE 3	JUNE 3	JUNE 3	JUNE 3
AREA	BRIN	BRIN	BRIN	BRIN	BRIN	BRIN
TIME START (PST)	1717	816	947	1126	1242	1352
DURATION(HR.MIN)	.27	.30	.28	.31	.30	.29
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	19.5	18.3	18.6	18.0	18.3	17.9
W. LONG. (DEG)	123	123	123	123	123	123
(MIN)	14.4	16.1	16.2	15.6	15.1	15.3
DIRECTION (DEG.TRUE)	180	240	232	252	250	256
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	18.3	17.8	18.0	17.6	17.9	17.6
W.LONG. (DEG)	123	123	123	123	123	123
(MIN)	14.9	17.9	17.7	17.4	17.1	17.2
DISTANCE NAUT. MI.	1.5	1.2	1.2	1.2	1.2	1.3
DEPTH (FATHOMS)	42- 44	56- 63	60- 65	42- 42	45- 55	34- 37
SEE FIGURE NO.	2	3	3	3	3	3
SURFACE TEMP(DEG.C)	..	13.1	..	..	..	..
BOTTOM TEMP.(DEG.C)	..	8.6	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	48	124	191	82	47	119
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	7	8	9	10	11	12
DATE	JUNE 2	JUNE 3	JUNE 3	JUNE 3	JUNE 3	JUNE 3
AREA	BRIN	BRIN	BRIN	BRIN	BRIN	BRIN
CATCH TOTAL (KG)	48	124	191	82	47	119
SHRIMP						
PINK (BOREALIS)	15	3	1	34	7	76
NUM/KG	236	224	..	236	224	244
PINK (JORDANI)	..	..	..	..	..	..
NUM/KG	..	..	..	..	..	..
PRAWN	..	4	3	3	T	8
NUM/KG	..	29	28	35	..	37
SIDESTRIPE	1	15	11	3	4	1
NUM/KG	84	76	94	74	102	80
OTHER SHRIMP	..	..	..	..	..	T
INVERTBRATES						
JELLYFISH	..	..	..	..	1	..
SQUID	..	1	1	..	..	..
HEART URCHIN	..	..	..	..	..	..
C. MAGISTER	..	..	..	..	1	1
OTHERS	..	..	T	T	..	3
FLATFISH						
ENGLISH SOLE	..	..	..	..	..	..
FLATHEAD SOLE	..	..	..	..	..	..
SLENDER SOLE	T	T	6	..	1	T
OTHERS	1	T	2	2	T	2
ROCKFISH						
S. DIPLOPROA	..	..	..	..	..	..
OTHERS	..	14	4	T	1	4
OTHER ROUNDFISH						
HAKE	13	24	33	8	5	..
HERRING	..	..	..	..	..	..
LINGCOD	..	3	..	..	..	T
MIDSHIPMAN	T	T	T	3	1	1
PACIFIC COD	..	4	4	..	6	..
WALLEYE POLLOCK	T	5	1	2	9	..
OTHERS	T	1	2	T	T	T
SELACHI						
DOGFISH	18	17	35	22	10	15
RATFISH	T	33	84	5	1	7
SKATES	..	..	3	..	..	1
OTHERS	..	..	1	..	..	..

Appendix table 1 (cont'd)

HAUL NO.	13	14	15	16	17	18
DATE	JUNE 3	JUNE 3	JUNE 4	JUNE 4	JUNE 4	JUNE 4
AREA	BRIN	BRIN	SRBK	SRBK	SRBK	SRBK
TIME START (PST)	1604	1723	814	931	1114	1220
DURATION(HR.MIN)	.30	.04	.29	.29	.24	.29
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	17.8	18.9	14.9	15.2	15.0	15.1
W. LONG. (DEG)	123	123	123	123	123	123
(MIN)	15.3	13.3	18.6	18.3	17.6	17.5
DIRECTION (DEG.TRUE)	258	240	190	200	189	190
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	17.4	18.8	13.5	13.9	13.8	13.7
W.LONG. (DEG)	123	123	123	123	123	123
(MIN)	17.2	13.6	18.9	18.5	18.0	17.7
DISTANCE NAUT. MI.	1.3	.2	1.4	1.4	1.2	1.4
DEPTH (FATHOMS)	30- 30	25- 27	84- 83	64- 77	42- 60	20- 29
SEE FIGURE NO.	3	2	4	4	4	4
SURFACE TEMP(DEG.C)	15.2	..	13.3	14.4	..	15.2
BOTTOM TEMP.(DEG.C)	8.6	..	8.8	8.8	..	9.2
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	94	17	253	59	21	2
REMARKS	USABLE	BAD BOTTOM	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	13	14	15	16	17	18
DATE	JUNE 3	JUNE 3	JUNE 4	JUNE 4	JUNE 4	JUNE 4
AREA	BRIN	BRIN	SRBK	SRBK	SRBK	SRBK
CATCH TOTAL (KG)	94	17	253	59	21	2
SHRIMP						
PINK (BOREALIS)	52	10	1	1	5	T
NUM/KG	288	368	268	236	230	..
PINK (JORDANI)	..	..	..	..	..	..
NUM/KG	..	..	..	..	..	..
PRAWN	1	..	1	1	T	..
NUM/KG	33	..	44	38	..	..
SIDESTRIPE	..	..	6	3	1	..
NUM/KG	..	..	83	93	72	..
OTHER SHRIMP	T	..	T	..	..	..
INVERTBRATES						
JELLYFISH	..	..	..	..	..	..
SQUID	..	..	1	1	T	..
HEART URCHIN	..	..	..	..	..	..
C. MAGISTER	..	..	2	..	..	..
OTHERS	T	T	..	T	..	..
FLATFISH						
ENGLISH SOLE	..	..	1	T	..	..
FLATHEAD SOLE	..	..	T	T	..	..
SLENDER SOLE	..	..	11	4	T	..
OTHERS	2	T	2	1	..	T
ROCKFISH						
S. DIPLOPROA	..	..	..	..	..	..
OTHERS	1	..	11	2	T	..
OTHER ROUNDFISH						
HAKE	14	1	19	11	5	..
HERRING	..	..	..	..	..	..
LINGCOD	T	..	2	..	..	..
MIDSHIPMAN	..	T	T	..	..	T
PACIFIC COD	2	..	..	3	3	..
WALLEYE POLLOCK	1	1	2	1	2	1
OTHERS	T	T	T	1	T	T
SELACHI						
DOGFISH	13	5	62	16	3	1
RATFISH	8	..	131	14	2	..
SKATES	..	..	..	..	..	..
OTHERS	..	..	1	T	..	..

Appendix table 1 (cont'd)

HAUL NO.	19	20	21	22	23	24
DATE	JUNE 4	JUNE 4	JUNE 4	JUNE 4	JUNE 5	JUNE 5
AREA	SRBK	SRBK	SRBK	SRBK	SRBK	SRBK
TIME START (PST)	1330	1445	1608	1804	828	940
DURATION(HR.MIN)	.30	.17	.29	.29	.29	.28
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	15.2	14.8	15.0	17.8	10.5	10.9
W. LONG. (DEG)	123	123	123	123	123	123
(MIN)	19.3	20.5	18.1	15.1	18.5	17.8
DIRECTION (DEG.TRUE)	190	200	180	250	190	180
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	13.7	14.1	13.7	17.1	8.8	9.5
W.LONG. (DEG)	123	123	123	123	123	123
(MIN)	19.5	20.7	17.9	17.3	19.2	17.8
DISTANCE NAUT. MI.	1.4	.8	1.3	1.6	1.8	1.6
DEPTH (FATHOMS)	96- 98	115-120	60- 57	25- 23	60- 66	31- 25
SEE FIGURE NO.	4	4	4	3	5	5
SURFACE TEMP(DEG.C)	14.7	15.3	..	..	12.7	..
BOTTOM TEMP.(DEG.C)	8.8	8.9	..	..	9.0	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	275	157	209	1	132	8
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	19	20	21	22	23	24
DATE	JUNE 4	JUNE 4	JUNE 4	JUNE 4	JUNE 5	JUNE 5
AREA	SRBK	SRBK	SRBK	SRBK	SRBK	SRBK
CATCH TOTAL (KG)	275	157	209	1	132	8
SHRIMP						
PINK (BOREALIS)	T	..	4	T	T	T
NUM/KG	..	..	248	..	..	..
PINK (JORDANI)	..	..	..	..	..	..
NUM/KG	..	..	..	..	..	..
PRAWN	1	T	T	..	..	..
NUM/KG	43	32	50	..	..	..
SIDESTRIPE	6	3	6	..	T	..
NUM/KG	88	84	87	..	65	..
OTHER SHRIMP	..	..	..	..	..	..
INVERTBRATES						
JELLYFISH	..	..	..	..	..	..
SQUID	1	T	..	T	..	..
HEART URCHIN	..	..	..	..	..	..
C. MAGISTER	..	..	5	..	..	..
OTHERS	T	..	1	..	..	..
FLATFISH						
ENGLISH SOLE	25	6	..	..	..	..
FLATHEAD SOLE	..	..	..	..	..	T
SLENDER SOLE	3	T	2	..	..	..
OTHERS	..	T	8	..	..	T
ROCKFISH						
S. DIPLOPROA	..	..	..	..	..	..
OTHERS	T	T	5	..	..	..
OTHER ROUNDFISH						
HAKE	23	9	60	1	48	2
HERRING	..	..	..	..	..	..
LINGCOD	..	..	..	..	..	..
MIDSHIPMAN	..	..	1	..	..	..
PACIFIC COD	..	1	2	..	12	..
WALLEYE POLLOCK	T	..	5	T	..	..
OTHERS	T	T	T	T	..	T
SELACHI						
DOGFISH	49	27	100	..	68	5
RATFISH	164	111	2	..	2	1
SKATES	..	T	8	..	..	..
OTHERS	3	T	T	..	2	..

Appendix table 1 (cont'd)

HAUL NO.	25	26	27	28	29	30
DATE	JUNE 5	JUNE 5	JUNE 5	JUNE 6	JUNE 6	JUNE 6
AREA	SRBK	SRBK	SRBK	SEPI	SEPI	SEPI
TIME START (PST)	1112	1211	1352	835	947	1115
DURATION(HR.MIN)	.25	.34	.28	.30	.30	.30
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	11.0	10.9	11.6	24.2	24.3	26.7
W. LONG. (DEG)	123	123	123	123	123	123
(MIN)	17.9	19.5	20.3	37.3	41.0	45.2
DIRECTION (DEG.TRUE)	180	181	187	120	108	145
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	9.6	9.4	10.1	23.5	24.0	25.6
W.LONG. (DEG)	123	123	123	123	123	123
(MIN)	18.1	19.4	20.6	35.6	39.3	44.0
DISTANCE NAUT. MI.	1.4	1.5	1.5	1.4	1.2	1.5
DEPTH (FATHOMS)	44- 42	81- 70	98- 98	45- 50	90- 86	70- 81
SEE FIGURE NO.	5	5	5	8	6	6
SURFACE TEMP(DEG.C)	12.3	..	..	14.7	..	..
BOTTOM TEMP.(DEG.C)	9.5	..	..	8.5	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	147	349	357	60	106	73
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	25	26	27	28	29	30
DATE	JUNE 5	JUNE 5	JUNE 5	JUNE 6	JUNE 6	JUNE 6
AREA	SRBK	SRBK	SRBK	SEPI	SEPI	SEPI
CATCH TOTAL (KG)	147	349	357	60	106	73
SHRIMP						
PINK (BOREALIS)	5	T	..	..	4	4
NUM/KG	162	..	..	..	246	276
PINK (JORDANI)	..	..	..	1	..	..
NUM/KG	..	..	..	152	..	..
PRAWN	..	..	T	6	T	T
NUM/KG	..	..	..	31	..	..
SIDESTRIPE	1	3	1	T	11	5
NUM/KG	87	81	78	..	112	72
OTHER SHRIMP	T	T	T	..	2	T
INVERTBRATES						
JELLYFISH	..	..	..	..	..	..
SQUID	T	T	..	..	2	..
HEART URCHIN	..	..	..	..	T	T
C. MAGISTER	1	..	T	T	..	..
OTHERS	..	..	T	1	..	..
FLATFISH						
ENGLISH SOLE	T	1	2	..	..	..
FLATHEAD SOLE	1	T	..	..	..	..
SLENDER SOLE	3	8	5	1	2	T
OTHERS	2	3	2	1	1	..
ROCKFISH						
S. DIPLOPROA	..	..	..	..	..	2
OTHERS	..	12	2	19	4	1
OTHER ROUNDFISH						
HAKE	28	44	48	19	34	26
HERRING	..	..	..	T	..	..
LINGCOD	..	..	..	..	..	..
MIDSHIPMAN	1	..	..	2	T	..
PACIFIC COD	..	2	3	..	1	4
WALLEYE POLLOCK	9	3	2	1	..	..
OTHERS	T	..	1	..	T	T
SELACHI						
DOGFISH	82	95	78	6	13	15
RATFISH	6	176	210	3	31	16
SKATES	7	..	..	..	..	..
OTHERS	1	2	3	..	1	..

Appendix table 1 (cont'd)

HAUL NO.	31	32	33	34	35	36
DATE	JUNE 6	JUNE 6	JUNE 6	JUNE 6	JUNE 6	JUNE 7
AREA	SEPI	SEPI	SEPI	SEPI	SEPI	HSKI
TIME START (PST)	1221	1328	1444	1613	1720	754
DURATION(HR.MIN)	.31	.32	.29	.30	.29	.30
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	24.5	22.3	23.1	22.8	22.5	24.1
W. LONG. (DEG)	123	123	123	123	123	123
(MIN)	44.7	45.0	42.3	38.3	33.6	29.3
DIRECTION (DEG.TRUE)	130	122	130	130	125	32
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	23.6	21.7	22.3	22.1	21.9	25.3
W.LONG. (DEG)	123	123	123	123	123	123
(MIN)	43.4	42.9	41.0	36.8	32.2	28.2
DISTANCE NAUT. MI.	1.3	1.5	1.2	1.2	1.1	1.4
DEPTH (FATHOMS)	95- 86	104-109	80- 74	98- 99	75- 97	44- 52
SEE FIGURE NO.	6	6	6	8	8	7
SURFACE TEMP(DEG.C)	..	13.9	..	..	..	14.6
BOTTOM TEMP.(DEG.C)	..	8.8	..	..	..	8.4
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	96	160	104	44	128	148
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	31	32	33	34	35	36
DATE	JUNE 6	JUNE 6	JUNE 6	JUNE 6	JUNE 6	JUNE 7
AREA	SEPI	SEPI	SEPI	SEPI	SEPI	HSKI
CATCH TOTAL (KG)	96	160	104	44	128	148
SHRIMP						
PINK (BOREALIS)	T	..	4	T	1	..
NUM/KG	..	..	280	..	268	..
PINK (JORDANI)	..	..	..	..	..	7
NUM/KG	..	..	..	..	..	100
PRAWN	T	1	1	T	..	T
NUM/KG	..	28	31	..	..	..
SIDESTRIPE	4	2	3	3	4	..
NUM/KG	66	64	70	93	86	..
OTHER SHRIMP	..	2	T	..	..	..
INVERTBRATES						
JELLYFISH	..	..	..	..	..	T
SQUID	2	2	..	..	1	..
HEART URCHIN	..	..	..	2	..	..
C. MAGISTER	..	..	..	..	..	..
OTHERS	T	T	1	1	T	T
FLATFISH						
ENGLISH SOLE	..	T	..	..	..	..
FLATHEAD SOLE	..	..	..	..	..	..
SLENDER SOLE	T	..	1	..	T	..
OTHERS	..	2	..	1	2	..
ROCKFISH						
S. DIPLOPROA	15	T	1	..	..	..
OTHERS	7	..	33	2	3	2
OTHER ROUNDFISH						
HAKE	36	96	5	18	55	130
HERRING	..	..	..	..	..	..
LINGCOD	..	..	..	..	5	..
MIDSHIPMAN	..	..	..	..	..	..
PACIFIC COD	..	..	..	..	..	..
WALLEYE POLLOCK	..	1	T	1	..	..
OTHERS	1	T	..	T	T	..
SELACHI						
DOGFISH	6	34	47	9	18	9
RATFISH	24	20	8	7	28	..
SKATES	..	..	..	..	10	..
OTHERS	1	T	..	T	1	..

Appendix table 1 (cont'd)

HAUL NO.	37	38	39	40	41	42
DATE	JUNE 7	JUNE 7	JUNE 7	JUNE 7	JUNE 7	JUNE 7
AREA	HSKI	HSKI	SEPI	SEPI	SEPI	SEPI
TIME START (PST)	858	955	1157	1324	1429	1603
DURATION(HR.MIN)	.27	.27	.30	.30	.29	.30
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	25.1	24.9	20.7	20.8	19.7	19.1
W. LONG. (DEG)	123	123	123	123	123	123
(MIN)	27.6	25.3	37.8	33.5	29.1	17.6
DIRECTION (DEG.TRUE)	58	22	115	122	130	262
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	25.8	26.1	20.2	20.2	18.9	19.7
W.LONG. (DEG)	123	123	123	123	123	123
(MIN)	25.8	24.6	36.2	31.9	27.7	19.5
DISTANCE NAUT. MI.	1.4	1.2	1.5	1.3	1.3	1.4
DEPTH (FATHOMS)	54- 58	91- 99	68- 83	88- 86	100- 85	73- 69
SEE FIGURE NO.	7	7	8	8	9	10
SURFACE TEMP(DEG.C)	14.9	..	..	..	..	..
BOTTOM TEMP.(DEG.C)	8.5	..	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	155	83	556	96	83	26
REMARKS	USABLE	USABLE	SNAG USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	37	38	39	40	41	42
DATE	JUNE 7	JUNE 7	JUNE 7	JUNE 7	JUNE 7	JUNE 7
AREA	HSKI	HSKI	SEPI	SEPI	SEPI	SEPI
CATCH TOTAL (KG)	155	83	556	96	83	26
SHRIMP						
PINK (BOREALIS)	T	16	T	3	5	T
NUM/KG	..	388	..	380	400	..
PINK (JORDANI)	T	..	..	..	..	..
NUM/KG	..	..	..	..	..	..
PRAWN	2	T	..	T	T	T
NUM/KG	30	..	..	..	..	..
SIDESTRIPE	1	6	1	9	5	1
NUM/KG	56	138	79	86	88	70
OTHER SHRIMP	..	..	..	..	..	..
INVERTBRATES						
JELLYFISH	..	..	..	..	..	..
SQUID	..	1	..	1	1	T
HEART URCHIN	..	..	..	..	..	..
C. MAGISTER	..	..	1	..	..	..
OTHERS	T	..	..	..	..	..
FLATFISH						
ENGLISH SOLE	..	..	..	T	..	..
FLATHEAD SOLE	..	..	..	T	..	..
SLENDER SOLE	..	..	..	T	1	..
OTHERS	..	..	T	T	1	..
ROCKFISH						
S. DIPLOPROA	..	8	42	..	1	1
OTHERS	26	3	11	T	1	T
OTHER ROUNDFISH						
HAKE	100	8	20	46	14	8
HERRING	..	..	..	..	..	..
LINGCOD	..	..	..	..	..	..
MIDSHIPMAN	T	1	..	..	..	..
PACIFIC COD	6	..	..	2	1	..
WALLEYE POLLOCK	3	1	23	1	2	..
OTHERS	T	1	..	1	2	..
SELACHI						
DOGFISH	16	21	454	20	35	2
RATFISH	1	16	4	13	13	14
SKATES	..	..	..	..	1	..
OTHERS	..	1	..	..	..	..

Appendix table 1 (cont'd)

HAUL NO.	43	44	45	46	47	48
DATE	JUNE 7	JUNE 8	JUNE 8	JUNE 8	JUNE 8	JUNE 8
AREA	SEPI	CBHI	CBHI	CBHI	CBHI	CBHI
TIME START (PST)	1735	725	836	1142	1305	1400
DURATION(HR.MIN)	.25	.30	.30	.22	.15	.15
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	19.0	38.0	38.3	38.6	38.7	39.5
W. LONG. (DEG)	123	124	124	124	124	124
(MIN)	24.6	49.5	49.3	49.1	48.6	48.7
DIRECTION (DEG.TRUE)	307	327	324	330	330	163
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	19.9	38.9	39.3	39.4	39.3	38.9
W.LONG. (DEG)	123	124	124	124	124	124
(MIN)	25.9	50.4	50.4	49.7	49.1	48.4
DISTANCE NAUT. MI.	1.3	1.1	1.2	.9	.7	.7
DEPTH (FATHOMS)	99- 74	32- 30	42- 36	45- 40	45- 44	43- 45
SEE FIGURE NO.	9	11	11	11	11	11
SURFACE TEMP(DEG.C)	14.2	14.6	..	..	..	..
BOTTOM TEMP.(DEG.C)	9.2	9.4	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	20	491	2982	2014	847	118
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	43	44	45	46	47	48
DATE	JUNE 7	JUNE 8	JUNE 8	JUNE 8	JUNE 8	JUNE 8
AREA	SEPI	CBHI	CBHI	CBHI	CBHI	CBHI
CATCH TOTAL (KG)	20	491	2982	2014	847	118
SHRIMP						
PINK (BOREALIS)	T	..	..	..	..	..
NUM/KG	..	..	..	..	..	..
PINK (JORDANI)	..	..	T	2	23	..
NUM/KG	..	..	..	121	124	..
PRAWN	..	..	T	..	..	..
NUM/KG	..	..	..	..	..	..
SIDESTRIPE	1	..	..	..	..	..
NUM/KG	112	..	..	..	..	..
OTHER SHRIMP	T	..	T	T	T	T
INVERTBRATES						
JELLYFISH	T	..	..	..	..	..
SQUID	T	..	..	..	..	..
HEART URCHIN	..	..	..	..	..	..
C. MAGISTER	..	..	..	..	..	..
OTHERS	..	1	T	..	..	T
FLATFISH						
ENGLISH SOLE	..	8	10	1	..	T
FLATHEAD SOLE	..	3	6	2	..	..
SLENDER SOLE	..	2	35	27	45	22
OTHERS	..	..	..	..	..	T
ROCKFISH						
S. DIPLOPROA	1	..	..	..	..	..
OTHERS	2	..	..	3	..	T
OTHER ROUNDFISH						
HAKE	10	..	..	..	T	T
HERRING	..	6	12	101	22	24
LINGCOD	..	T	4	27	..	4
MIDSHIPMAN	T	3	T	1	2	2
PACIFIC COD	..	104	255	165	33	59
WALLEYE POLLOCK	1	..	..	..	T	..
OTHERS	..	7	10	9	..	7
SELACHI						
DOGFISH	2	350	2648	1634	722	..
RATFISH	3	2	2	..	..	..
SKATES	..	5	..	42	..	..
OTHERS	T	..	..	..	..	..

Appendix table 1 (cont'd)

HAUL NO.	49	50	51	52	53	54
DATE	JUNE 8	JUNE 8	JUNE 8	JUNE 9	JUNE 9	JUNE 9
AREA	CBHI	CBHI	CBHI	CBHI	CBHI	CBHI
TIME START (PST)	1459	1612	1703	843	946	1109
DURATION(HR.MIN)	.01	.19	.30	.30	.10	.30
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	39.6	36.7	36.7	35.4	35.5	39.0
W. LONG. (DEG)	124	124	124	124	124	124
(MIN)	48.3	48.4	47.6	45.8	44.9	45.1
DIRECTION (DEG.TRUE)	0	317	330	315	322	320
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	39.6	37.4	38.0	36.2	35.8	39.9
W.LONG. (DEG)	124	124	124	124	124	124
(MIN)	48.3	49.2	49.0	47.0	45.3	46.3
DISTANCE NAUT. MI.	..	.9	1.6	1.1	.4	1.2
DEPTH (FATHOMS)	28- 28	30- 32	50- 44	36- 36	43- 44	75- 65
SEE FIGURE NO.	-	12	12	12	12	12
SURFACE TEMP(DEG.C)	..	..	..	14.5	..	15.0
BOTTOM TEMP.(DEG.C)	..	..	..	9.3	..	8.5
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	16	15	939	1094	46	86
REMARKS	UNUSABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	49	50	51	52	53	54
DATE	JUNE 8	JUNE 8	JUNE 8	JUNE 9	JUNE 9	JUNE 9
AREA	CBHI	CBHI	CBHI	CBHI	CBHI	CBHI
CATCH TOTAL (KG)	16	15	939	1094	46	86
SHRIMP						
PINK (BOREALIS)	..	..	..	..	..	..
NUM/KG	..	..	..	..	..	..
PINK (JORDANI)	..	..	14	..	..	4
NUM/KG	..	..	156	..	..	194
PRAWN	..	..	..	..	..	T
NUM/KG	..	..	..	..	..	53
SIDESTRIPE	..	..	..	..	..	T
NUM/KG	..	..	..	..	..	..
OTHER SHRIMP	..	..	1	T	..	T
INVERTBRATES						
JELLYFISH	..	..	..	..	..	..
SQUID	..	..	..	..	..	..
HEART URCHIN	..	..	..	..	..	..
C. MAGISTER	..	..	..	..	..	..
OTHERS	..	..	T	T	..	..
FLATFISH						
ENGLISH SOLE	T	T	..	6	..	1
FLATHEAD SOLE	..	..	1	T	..	..
SLENDER SOLE	..	..	76	7	..	1
OTHERS	..	..	..	..	..	1
ROCKFISH						
S. DIPLOPROA	..	..	..	..	..	..
OTHERS	..	..	2	8	3	..
OTHER ROUNDFISH						
HAKE	..	..	8	T	..	17
HERRING	..	5	14	8	..	..
LINGCOD	..	..	4	3	..	..
MIDSHIPMAN	..	T	1	4	..	..
PACIFIC COD	T	T	79	58	..	3
WALLEYE POLLOCK	..	..	..	2	..	..
OTHERS	..	T	2	7	..	..
SELACHI						
DOGFISH	16	10	720	972	43	29
RATFISH	..	..	17	1	..	21
SKATES	..	..	..	18	..	9
OTHERS	..	..	..	..	..	..

Appendix table 1 (cont'd)

HAUL NO.	55	56	57	58	59	60
DATE	JUNE 9	JUNE 9	JUNE 9	JUNE 9	JUNE 9	JUNE 10
AREA	CBHI	CBHI	CBHI	CBHI	CBHI	CBHI
TIME START (PST)	1232	1345	1457	1615	1715	837
DURATION(HR.MIN)	.28	.30	.20	.30	.30	.30
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	38.3	38.1	41.7	41.8	43.3	34.7
W. LONG. (DEG)	124	124	124	124	124	124
(MIN)	44.9	45.1	48.7	48.0	48.6	39.8
DIRECTION (DEG.TRUE)	320	320	330	325	140	137
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	39.4	39.2	42.9	42.9	42.2	33.7
W.LONG. (DEG)	124	124	124	124	124	124
(MIN)	46.3	46.4	49.6	48.8	47.4	38.4
DISTANCE NAUT. MI.	1.4	1.4	1.3	1.3	1.4	1.4
DEPTH (FATHOMS)	75- 64	60- 62	35- 30	53- 54	69- 73	72- 70
SEE FIGURE NO.	12	12	11	11	11	13
SURFACE TEMP(DEG.C)	..	..	..	..	..	16.8
BOTTOM TEMP.(DEG.C)	..	..	..	..	..	8.5
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	47	5	..	297	145	269
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	55	56	57	58	59	60
DATE	JUNE 9	JUNE 9	JUNE 9	JUNE 9	JUNE 9	JUNE 10
AREA	CBHI	CBHI	CBHI	CBHI	CBHI	CBHI
CATCH TOTAL (KG)	47	5	0	297	145	269
SHRIMP						
PINK (BOREALIS)	..	..	..	..	..	..
NUM/KG	..	..	..	..	..	..
PINK (JORDANI)	4	..	..	T	6	10
NUM/KG	178	..	..	..	192	156
PRAWN	T	..	..	T	T	..
NUM/KG	..	..	..	..	..	..
SIDESTRIPE	T	..	..	..	T	4
NUM/KG	45	..	..	..	57	54
OTHER SHRIMP	T	..	..	..	T	..
INVERTEBRATES						
JELLYFISH	..	..	..	..	..	..
SQUID	..	..	..	1	2	T
HEART URCHIN	..	..	..	..	..	..
C. MAGISTER	..	..	..	..	..	..
OTHERS	..	..	..	T	T	..
FLATFISH						
ENGLISH SOLE	..	..	..	T	..	T
FLATHEAD SOLE	..	..	..	2	T	5
SLENDER SOLE	1	..	..	15	2	8
OTHERS	1	..	..	4	..	T
ROCKFISH						
S. DIPLOPROA	T	..	..	..	17	30
OTHERS	4	..	..	14	3	T
OTHER ROUNDFISH						
HAKE	15	5	..	31	48	60
HERRING	..	..	..	..	..	..
LINGCOD	..	..	..	..	..	..
MIDSHIPMAN	T	..	..	..	T	..
PACIFIC COD	1	..	..	..	2	7
WALLEYE POLLOCK	..	..	..	..	2	1
OTHERS	T	..	..	2	T	..
SELACHI						
DOGFISH	12	..	..	41	40	24
RATFISH	9	T	..	187	23	120
SKATES	..	..	..	..	..	..
OTHERS	..	..	..	..	..	..

Appendix table 1 (cont'd)

HAUL NO.	61	62	63	64	65	66
DATE	JUNE 10	JUNE 10	JUNE 10	JUNE 10	JUNE 10	JUNE 10
AREA	CBHI	CBHI	CBHI	CBHI	QWFC	QWFC
TIME START (PST)	945	1118	1229	1345	1604	1653
DURATION(HR.MIN)	.30	.30	.30	.30	.06	.30
START N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	33.8	35.5	35.1	36.6	26.0	26.8
W. LONG. (DEG)	124	124	124	124	124	124
(MIN)	37.7	38.5	36.8	37.0	34.4	33.8
DIRECTION (DEG.TRUE)	315	142	315	135	130	140
FINISH N. LAT. (DEG)	49	49	49	49	49	49
(MIN)	34.8	34.5	35.9	35.6	25.8	25.8
W.LONG. (DEG)	124	124	124	124	124	124
(MIN)	39.1	37.3	38.1	35.6	31.1	32.5
DISTANCE NAUT. MI.	1.3	1.3	1.2	1.3	.4	1.3
DEPTH (FATHOMS)	80- 80	90- 92	94- 89	70- 90	71- 72	99- 87
SEE FIGURE NO.	13	13	13	13	14	14
SURFACE TEMP(DEG.C)	..	17.9	..	..	..	19.8
BOTTOM TEMP.(DEG.C)	..	8.8	..	..	..	8.7
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	173	183	121	100	121	284
REMARKS	USABLE	USABLE	USABLE	USABLE	SNAG DUMPED USABLE	ALL JUNK

Appendix table 1 (cont'd)

HAUL NO.	61	62	63	64	65	66
DATE	JUNE 10	JUNE 10	JUNE 10	JUNE 10	JUNE 10	JUNE 10
AREA	CBHI	CBHI	CBHI	CBHI	QBFC	QBFC
CATCH TOTAL (KG)	173	183	121	100	121	284
SHRIMP						
PINK (BOREALIS)	..	..	..	..	..	..
NUM/KG	..	..	..	..	..	..
PINK (JORDANI)	7	2	3	10	3	1*
NUM/KG	160	138	156	228	180	..
PRAWN	..	T	..	1	1	1*
NUM/KG	..	..	..	56	75	..
SIDESTRIPE	6	8	6	2	T	5*
NUM/KG	54	73	68	62	..	..
OTHER SHRIMP	..	T	T	..	..	..
INVERTBRATES						
JELLYFISH	..	..	..	..	..	..
SQUID	1	T	T	..	..	..
HEART URCHIN	..	..	..	..	..	..
C. MAGISTER	..	..	..	..	..	..
OTHERS	..	T	..	..	..	T
FLATFISH						
ENGLISH SOLE	T	3	..	2	..	..
FLATHEAD SOLE	3	..	..	..	..	..
SLENDER SOLE	3	3	3	2	..	..
OTHERS	T	..	2	..	..	2
ROCKFISH						
S. DIPLOPROA	3	21	18	3	1	10*
OTHERS	..	1	..	4	1	12
OTHER ROUNDFISH						
HAKE	20	12	4	44	81	35*
HERRING	..	..	..	..	..	..
LINGCOD	..	..	..	..	16	..
MIDSHIPMAN	T	..	..	1	..	..
PACIFIC COD	..	2	30	..	2	2*
WALLEYE POLLOCK	4	68	T	5	2	..
OTHERS	T	T	1	..	..	1
SELACHI						
DOGFISH	16	33	37	16	14	140*
RATFISH	110	25	17	10	..	70*
SKATES	..	5	..	..	..	5*
OTHERS	..	T	..	..	..	..

Appendix table 1 (cont'd)

HAUL NO.	67	68	69	70	71	72
DATE	JUNE 11	JUNE 11	JUNE 14	JUNE 14	JUNE 14	JUNE 14
AREA	QBFC	QBFC	NUCH	CCSC	CCSC	CCSC
TIME START (PST)	801	943	800	1128	1246	1401
DURATION(HR.MIN)	.30	.09	.25	.30	.30	.30
START N. LAT. (DEG)	49	49	49	48	48	48
(MIN)	21.8	21.9	9.9	52.1	53.4	54.7
W. LONG. (DEG)	124	124	123	123	123	123
(MIN)	19.2	18.7	52.6	35.7	37.0	38.7
DIRECTION (DEG.TRUE)	312	318	145	346	327	328
FINISH N. LAT. (DEG)	49	49	49	48	48	48
(MIN)	22.5	22.1	9.1	53.2	54.5	55.7
W.LONG. (DEG)	124	124	123	123	123	123
(MIN)	20.6	19.1	51.7	36.2	38.1	39.7
DISTANCE NAUT. MI.	1.2	.4	1.0	1.2	1.3	1.3
DEPTH (FATHOMS)	72- 71	87- 90	70- 62	112-110	84- 76	69- 62
SEE FIGURE NO.	15	15	16	17	17	18
SURFACE TEMP(DEG.C)	..	17.8	..	..	..	..
BOTTOM TEMP.(DEG.C)	..	8.8	..	..	..	..
TYPE OF GEAR	8	8	8	8	8	8
TOTAL CATCH (KG)	161	41	223	305	289	234
REMARKS	NET TORN USABLE	SNAG UNUSABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	67	68	69	70	71	72
DATE	JUNE 11	JUNE 11	JUNE 14	JUNE 14	JUNE 14	JUNE 14
AREA	QBFC	QBFC	NUCH	CCSC	CCSC	CCSC
CATCH TOTAL (KG)	161	41	223	305	289	234
SHRIMP						
PINK (BOREALIS)	..	..	2	88	5	2
NUM/KG	..	..	260	344	325	350
PINK (JORDANI)	2	1	..	..	3	18
NUM/KG	208	212	..	..	205	252
PRAWN	2	T	1	T	T	3
NUM/KG	59	..	55	..	..	39
SIDESTRIPE	T	1	7	78	65	18
NUM/KG	..	110	98	128	126	132
OTHER SHRIMP	..	T	T	T	..	..
INVERTBRATES						
JELLYFISH	..	..	..	..	10	..
SQUID	T	1	1	..	..	..
HEART URCHIN	..	..	T	96	54	37
C. MAGISTER	..	..	3	1	1	2
OTHERS	..	..	1	4	..	..
FLATFISH						
ENGLISH SOLE	..	..	T	1	1	..
FLATHEAD SOLE	..	..	T	T	4	1
SLENDER SOLE	1	T	..	2	1	6
OTHERS	3	1	8	T	2	T
ROCKFISH						
S. DIPLOPROA	59	5	10	T	4	..
OTHERS	23	T	10	T	8	4
OTHER ROUNDFISH						
HAKE	32	7	39	2	10	31
HERRING	..	..	..	..	..	..
LINGCOD	..	3	10	14	2	..
MIDSHIPMAN	..	..	T	..	T	19
PACIFIC COD	6	..	7	6	..	14
WALLEYE POLLOCK	1	..	3	3	2	12
OTHERS	..	..	3	..	..	..
SELACHI						
DOGFISH	19	10	87	..	106	63
RATFISH	13	12	31	10	8	1
SKATES	..	..	T	..	2	1
OTHERS	..	..	..	..	1	2

Appendix table 1 (cont'd)

HAUL NO.	73	74	75	76	77
DATE	JUNE 14	JUNE 14	JUNE 15	JUNE 15	JUNE 15
AREA	CLSC	CLSC	CLSC	CLSC	CLSC
TIME START (PST)	1607	1735	717	830	940
DURATION(HR.MIN)	.30	.25	.30	.30	.30
START N. LAT. (DEG)	48	48	49	49	49
(MIN)	56.6	59.8	3.0	3.0	6.3
W. LONG. (DEG)	123	123	123	123	123
(MIN)	42.6	43.4	43.7	41.2	45.9
DIRECTION (DEG.TRUE)	345	321	330	312	153
FINISH N. LAT. (DEG)	48	49	49	49	49
(MIN)	57.9	0.8	4.5	4.0	4.9
W.LONG. (DEG)	123	123	123	123	123
(MIN)	43.1	44.5	44.7	43.0	44.8
DISTANCE NAUT. MI.	1.3	1.3	1.6	1.6	1.5
DEPTH (FATHOMS)	46- 45	38- 32	37- 33	25- 33	33- 33
SEE FIGURE NO.	18	19	20	20	20
SURFACE TEMP(DEG.C)	17.6	..	15.6	..	..
BOTTOM TEMP.(DEG.C)	9.0	..	9.4	..	..
TYPE OF GEAR	8	8	8	8	8
TOTAL CATCH (KG)	1353	374	796	71	1044
REMARKS	USABLE	USABLE	USABLE	USABLE	USABLE

Appendix table 1 (cont'd)

HAUL NO.	73	74	75	76	77
DATE	JUNE 14	JUNE 14	JUNE 15	JUNE 15	JUNE 15
AREA	CLSC	CLSC	CLSC	CLSC	CLSC
CATCH TOTAL (KG)	1353	374	796	71	1044
SHRIMP					
PINK (BOREALIS)	..	..	..	..	..
NUM/KG	..	..	..	..	..
PINK (JORDANI)	17	T	7	T	3
NUM/KG	244	..	184	..	..
PRAWN	T	..	T	..	T
NUM/KG	..	..	..	..	..
SIDESTRIPE	..	..	T	..	T
NUM/KG	..	..	..	..	..
OTHER SHRIMP	..	..	T	T	T
INVERTBRATES					
JELLYFISH	..	..	..	..	..
SQUID	..	..	..	..	..
HEART URCHIN	..	..	T	..	T
C. MAGISTER	..	..	..	..	..
OTHERS	..	..	T	1	T
FLATFISH					
ENGLISH SOLE	..	..	8	6	11
FLATHEAD SOLE	68	60	72	6	77
SLENDER SOLE	39	19	68	2	77
OTHERS	..	T	1	..	T
ROCKFISH					
S. DIPLOPROA	..	..	..	..	..
OTHERS	2	2	..	..	..
OTHER ROUNDFISH					
HAKE	1000	251	251	15	483
HERRING	..	..	6	8	7
LINGCOD	1	..	T	2	T
MIDSHIPMAN	83	2	15	..	14
PACIFIC COD	10	..	19	1	20
WALLEYE POLLOCK	3	..	3	3	13
OTHERS	T	T	28	10	31
SELACHI					
DOGFISH	118	35	313	16	302
RATFISH	12	5	..	1	3
SKATES	..	..	5	..	3
OTHERS	..	..	..	..	..

Footnotes to Appendix table 1:

AREA:
- BRIN = Burrard Inlet
- SRBK = Sturgeon Bank
- SEPI = Sechelt to Passage Island
- HSKI = Howe Sound - Keats Island
- CBHI = Comox Bar - Hornby Island
- QBFC = Qualicum Beach - French Creek
- NUCH = Northumberland Channel
- CCSC = Crofton-Chemainus, Stuart Channel
- CLSC = Chemainus-Ladysmith, Stuart Channel

TIME START: Pacific Standard Time

DISTANCE: Nautical miles

TYPE OF GEAR: 8=National Marine Fisheries shrimp sampling trawl

T: Trace